

December 24, 1925

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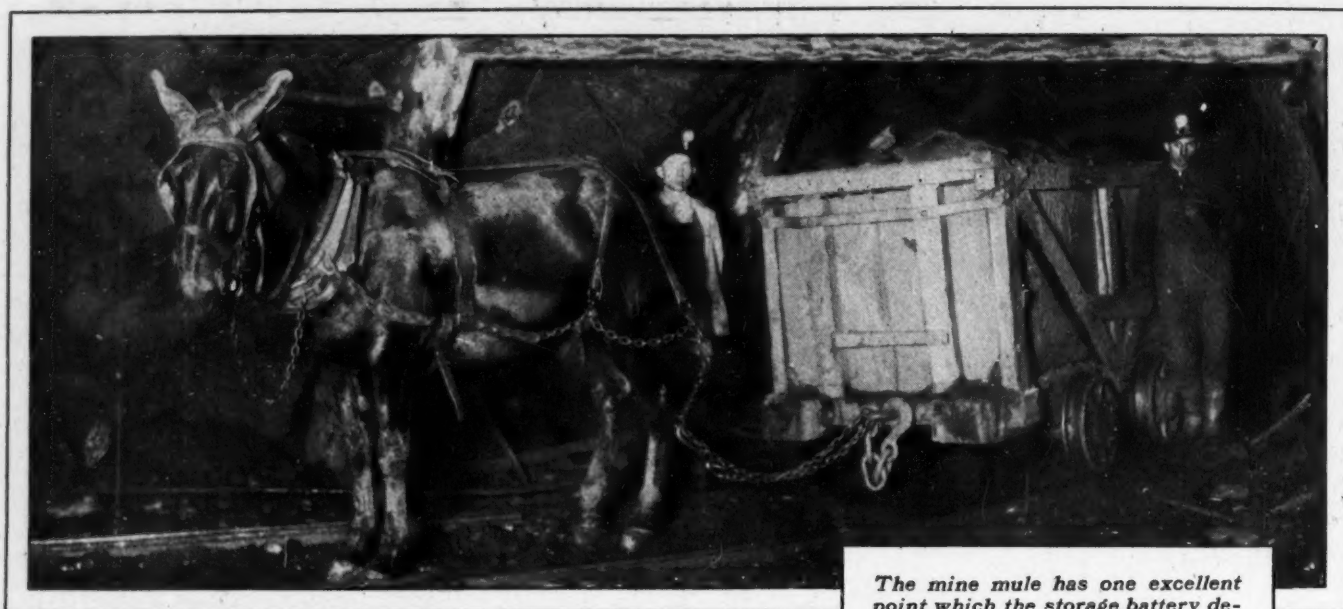
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THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia

Exide Batteries of Canada, Limited, 153 Dufferin Street, Toronto

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PAUL WOOTON
Washington Correspondent

With which is consolidated "The Colliery Engineer" and "Mines and Minerals"
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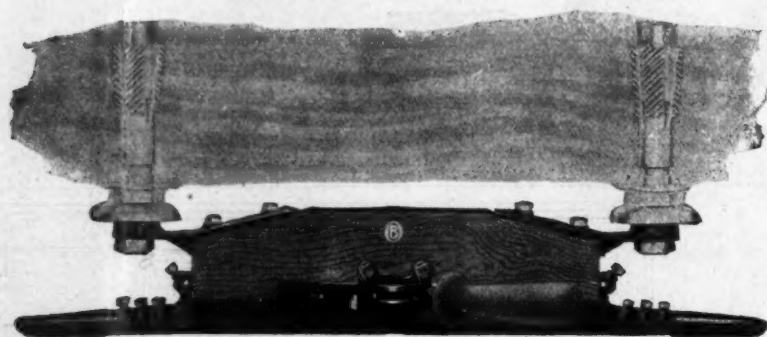
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More Conveyors

CONVEYORS! Perhaps they are going to revolutionize the coal mining industry. Who knows? It is certain they are gripping mining men's attention everywhere. But what particular type will meet each need? And how can bad roof be held well enough to give a conveyor a fair chance at a long face? Successful installations help answer these questions.

DOWN IN ALABAMA is a jiggling conveyor which belongs in the class of probable successes. J. H. Edwards, associate editor, in next week's *Coal Age* will tell the story of this installation at the old Aldrich mine, a convict-worked property which began producing coal in 1835. It was once abandoned because of dangerous roof but for years it has been worked on a longwall basis and today it loads coal 310 days a year from five 325-ft. faces using sectional conveyors of the Mavor & Coulson type but perfected for Alabama conditions and built by Alabama men.

ROOF CONTROL has always been a problem in the mine but after many years of longwall experience with two or more conveyors, the mine engineers have worked out a plan of timbering and a system of shallow cutting that give good results. There may be many other mines in the land with similar natural conditions. Operators of these will have the benefit of years of Aldrich experience when this article appears next week.



Localize Haulage Interruptions

Every accident affecting the trolley circuit and interrupting power can be localized—isolated—by opening properly located O-B Section Insulator Switches.

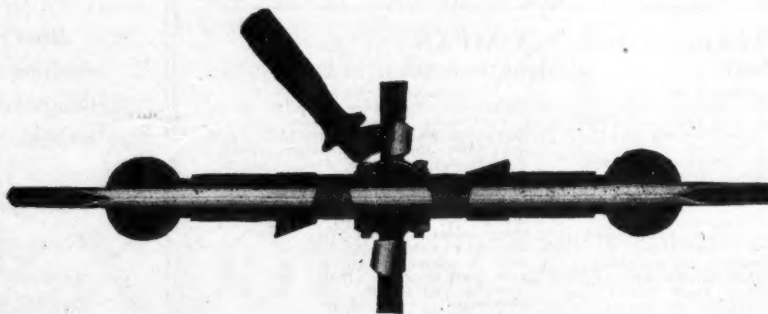
Fall of slate—broken trolley wire—electricians making extensions or repairs—any necessary disconnection of power in the trolley line should be kept in a confined section with an open Type M Switch.

Let us help you sectionalize your mine to the best advantage.

*O-B Type M Switches
pay for themselves many
times in mine-hours of
haulage saved*

The Ohio Brass Company
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*With the switch open, the fixed center
runner-piece permits free passage of the
trolley wheel.*



TROLLEY MATERIAL

COAL AGE

McGraw-Hill Company, Inc.
James H. McGraw, President
E. J. Mehren, Vice-President

Devoted to the Operating, Technical and Business
Problems of the Coal-Mining Industry

R. Dawson Hall
Engineering Editor

Volume 28

NEW YORK, DECEMBER 24, 1925

Number 26

What the Public Wants

BECAUSE the anthracite producers have declined to have anything to do with the Pinchot eleven-point "peace" program, the Governor of Pennsylvania charges them with warring against the public. That the public is a real party to the controversy between the operators and the miners is well recognized. But before we can acknowledge any truth in the Pinchotian indictment, we must understand clearly what the objectives of the public are and how they coincide or conflict with the objectives for which producers and miners have been fighting since July.

What does the public want? First and foremost, the public wants an uninterrupted supply of coal. It wants the old-time assurance that coal can be had whenever the consumer is disposed to order fuel. Second, the public wants to purchase that coal at the lowest possible price. If the issue is raised, the public is willing that that price shall be high enough to fairly compensate both the capital and the labor employed in the production and distribution of coal. These are the sum total of its wants.

The public has complained in recent years that these simple wants have not been met. The anthracite producers have conceded that there is merit in that complaint. To meet the first demand of the public they have asked repeatedly that the miners join with them in an agreement which would make future strikes impossible. The basis of that proposed agreement is that disputes between employers and employees which cannot be settled by direct negotiations shall be submitted to an impartial board of arbitration.

To meet the second demand of the public, the operators have declared their opposition to further increases in the cost of production. The union, in terminating the wage negotiations with the producers at Atlantic City last summer, refused to give the employers the opportunity to present the grounds for their opposition to further increases in labor costs. The union scale committee disputed the claim that the industry could not pay higher wages without passing on the cost to the consumer and then denied the operators a hearing on that claim.

Union leaders and Governor Pinchot have accused the operators of declining "to yield one jot or tittle of their original position." That accusation, however, conveniently ignores the fact that the operators have offered to submit their justification to the judgment of an impartial board of arbitration with unrestricted power to determine the issues. The greatest concession that the union leaders have been willing to make in the public interest is an agreement to submit to arbitration *how much higher*, if any, wages might be advanced. Arbitration to prevent future suspensions has been repeatedly rejected by Mr. Lewis and his associates.

The public wants an assured supply of fuel at a fair price. The public wants are the operators' necessities.

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On Solid Ground

RUMOR HAS IT that the British visitors who have just departed were principally impressed in their trips through the mines of this country, not so much with our mechanical developments as with our practice of keeping our haulage roads in solid coal instead of in the "goaf or broken" as they would term it. The British use much longwall advancing and so have roads that lack permanency, with crumbling roofs and moving sides. The investigations of the visiting party seemed to convince them that longwall retreating was better because it afforded good roofs and a reduction of timbering.

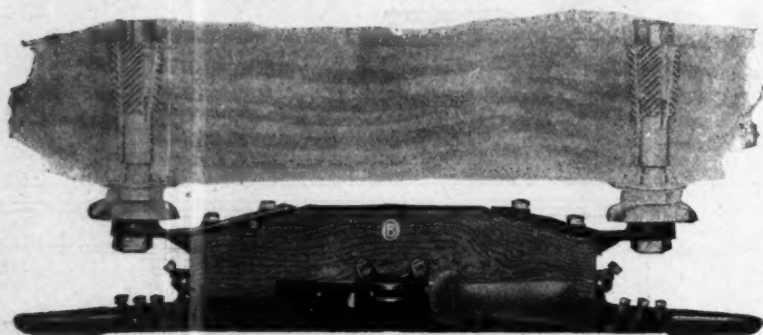
In some cases where permanence is desired, as in the anthracite region where thick beds are mined under heavy cover, gangways in the rock or in underlying coal beds too thin to mine and where rock has to be lifted or brushed have been used with success. They frequently have in a high degree the permanence that is so desirable. Timber is not needed, or may be used sparingly.

The gangways are truly "in the solid," and nowadays with machines so readily available for loading rock it is to be expected that the mileage of such gangways will be greatly increased, especially for drainage purposes. Many a mine manager if he could have foreseen the timber costs, delays, danger and maintenance expense that his gangways in the coal entailed would have cheerfully faced the expense of placing them in solid strata where they would have been subject to less strain from mining operations. In fact, the elaborate timbering in some of the workings suggests forcibly that tunnels in the rock might frequently be made to replace present gangways with improvement in some cases in the gradients of the roadway.

Fewer Types of Equipment and Fewer Troubles

ID CERTAINLY like, sometime, to work where all the equipment is the same," said the chief electrician of a large mine. After a pause he added, "But then, you don't get paid for doing nothing. The chief at a standardized mine would have a snap, and more than likely would be paid accordingly." He was not, necessarily, correct in his conclusion that standardization of equipment would mean that the company would make a saving by paying a lower salary to its chief electrician. Such men are paid for their knowledge and for being on the job ready for emergencies, instead of for the actual physical and mental work performed. Nevertheless, this chief electrician correctly judged the importance of standardization.

One evident and direct advantage of standards is



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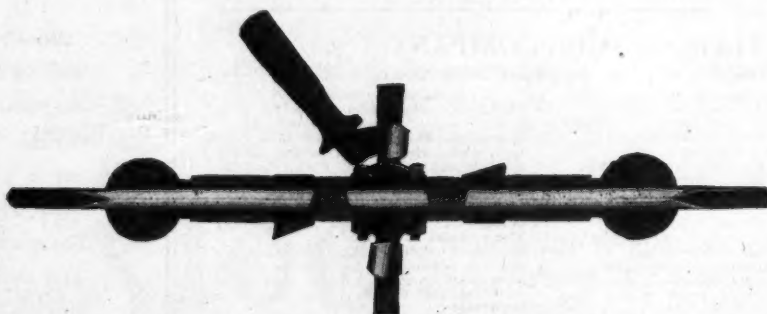
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One evident and direct advantage of standards is

the reduced stock of repair and spare parts necessary to insure continuous operation. Less space and less labor are required to store and maintain the stock, and it is more certain that necessary parts are on hand when the call comes. Fewer repair men are needed, and better work is done because the men are more familiar with the details of the equipment. Cases of abuse by machine operators to one type of machine, in order to get the chance to use a preferred type, are eliminated; a less percentage of delay makes it possible to operate with fewer machines; mechanical troubles are more readily detected, and permanent improvements thereby effected. Investigation usually will reveal that, at low-cost mines, highly standardized equipment and methods are in use.

An After-the-War Readjustment

BECAUSE of the cheapening of money and the appreciation of goods, salaries have in general been raised throughout the United States, but not adequately in the government service, though increases have been granted to those whose emoluments are commonly known rather as wages than as salaries.

Justice demands that the compensations of those in the government service shall rise and fall reasonably in accord with the salaries and wages of the public in general. It must be remembered that none of them has a way of supplementing his earnings like Congressmen by performing unofficial service.

Just at present pressure is being brought to raise the salaries of district judges 33 per cent from \$7,500 a year to a minimum of \$10,000 with a maximum set \$1,000 below the salary of circuit judges wherever the district population exceeds 2,000,000. The circuit judges, who have been receiving \$8,500, would have their salaries increased so as to range from \$3,000 to \$15,000. The Supreme Court judges will be raised from \$14,500 to \$20,000 and the Chief Justice from \$15,000 to \$20,500.

Since 1891 the salaries of district judges have been raised 50 per cent, of circuit judges 38½ per cent and judges of the Supreme Court 16 per cent. The salary of the chief justice is less than a third that of Great Britain's leading judicial authority and half that of Ireland's principal judge. The Lord Chief Justice of Scotland gets two-thirds more than our Chief Justice and the rate in India is but \$1,000 less.

That is not all. The salaries for state judges are lower than the salaries for federal judges in a large number of cases. A judge of the Supreme Court of Pennsylvania or New York gets \$3,000 a year more than a judge in the Supreme Court of the United States, yet it is now proposed to raise these salaries in the first-named state. The proposed bill will add only \$743,000 to the national budget, and the total cost for all the salaries of all the federal judges in the United States will be less than two cents per year for every person in the United States.

No less than six judges in the New York district have recently resigned to enter legal practice which nets them much larger returns. The president has found others to replace them, doubtless, but the character of the judges must decline if their present salaries are to continue; first, because the best men will not enter the service of the government, and second, because they will leave before they become definitely posted on all the matters which a judge must decide.

Progress of the Strike

EVIDENTLY the boys are not to be out of the trenches by Christmas, although it is rumored here and there that peace in the matter of the coal strike may not be far off. The main strategy of the Mine Workers, upon which their officials depended, has so far failed, in the lack of enthusiastic response of public sentiment in their favor and the expected amount of clamor and pressure upon the government to intervene.

And the government at Washington persistently refuses to jump when the strings are pulled by the officials of the striking coal union. Wages in the anthracite industry, they recognize, and the public recognizes, are already higher in proportion than in most similar industries—they are far higher, for example, than those with which the metal miners are contenting themselves without complaint. The anthracite miners (operators and workmen) should clearly perceive that further raising of costs is not only inadvisable but impossible, because it would mean a further loss of the already insecure anthracite markets and a corresponding blow to anthracite labor and capital. Any further increase in mining costs, it is realized, must be passed on to the public; and the public has clearly indicated that in that case it will take its business elsewhere.

It is to be hoped that the outcome will be a more helpful and co-operative form of unionism. The coal industry is a national problem, not so much because of any close organization among coal operators (indeed the Federal Government and coal commissions have complained of the lack of any centralized competent organization of capital with whom parley could be held); it is a national problem, and in time of strikes appears to be a national monopoly, through the recent monopoly of mine labor. What the coal industry needs is freer competition, which indeed has been partly obtained in the present emergency by the increased activity of the bituminous industry.

CLOSE ANALYSIS OF ACCIDENTS will prevent their recurrence. Any accident that might have caused an injury but did not should be investigated and the result recorded. No accident should be grouped under a single cause, but cross-indexed and cross-recorded under all the various elements surrounding or causing it—negligence, lack of instruction, sickness, feebleness, age, ignorance, or lack of sight of victim where there is one, lack of light, time of day, day of week, faulty track, weather conditions, seam of coal and part of mine.

THE PUBLIC DOESN'T DESIRE knowledge for its guidance. If it thinks something is being hidden from it, it naturally becomes anxious to find out what it is. With ascertainment completed the interest dies. The facts are no longer news. The papers want "exclusive stuff." If they all get a story, especially without asking for it, they won't take the trouble to print it. But if it's a secret, that's another matter. Perhaps a little greater coal publicity would do no harm.

SEEING THAT ANTHRACITE is faced by competition from substitutes and that competition can be proved by many public utterances and other unquestionable evidence, it is time that legislation imposing differential taxation on anthracite be repealed, thus lowering the cost on that commodity to the consumer.

Improved Blasting Methods Increase Proportion Of Lump Coal in Output*

Standard Shooting Practice Should Be Adopted—
Shothole Placement, Size of Cartridge, Kind of
Stemming, All Exert Non-Cumulative Influences

By J. E. Tiffany†
Pittsburgh, Pa.

SUCCESSFUL coal marketing usually hinges upon the thoroughness of preparation and the percentage of lump coal contained in the mine product. Methods employed in blasting the coal from the working face and all operations incident thereto are of primary importance because subsequent care in preparation cannot atone for lack of skill in bringing the coal down. In order to obtain a more marketable product and simultaneously increase safety and efficiency in coal shooting it is necessary to standardize all operations incident to mining.

No standard round of shots applicable to all mines is possible because working places differ greatly in width and height. Furthermore, coal beds vary appreciably in texture and in the number and position of the bands of impurity contained. By proper investigation, however, it usually is possible to devise a standard method applicable to any particular mine. How this may be accomplished and the result of tests made by the U. S. Bureau of Mines will be here set forth. These tests show the relations existing between the methods of placing and charging the holes, the actual quantity of lump produced and the possibilities of improving blasting practice. The trials here depicted were carried out in two large mines working the Pittsburgh bed, and in one southern Illinois mine, of 4,000 tons capacity, working the No. 6 measure of that state.

The first two investigations were prosecuted under a fellowship agreement with the Carnegie Institute

*Abstract of paper entitled "Recent Developments in Shooting Coal" presented with the approval of the acting director of the U. S. Bureau of Mines, before the West Virginia Coal Mining Institute, Nov. 24, 1925. Mr. Tiffany covered the same subject at the Coal Mining Institute of America, Pittsburgh, Pa., Dec. 10, 1925.

†Explosives testing engineer, Pittsburgh Experiment Station, U. S. Bureau of Mines.

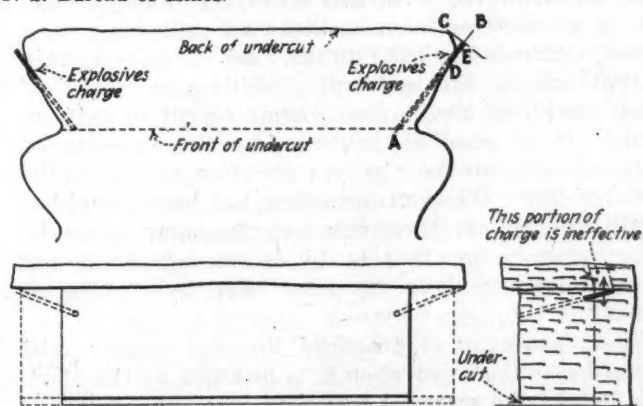


Fig. 1—A Gripping Undercut

Sumping the machine at an angle to the rib and withdrawing it in a similar position results in the back of the cut being wider than the front. Rib holes are liable to be drilled into solid coal thus seriously decreasing the effectiveness of their explosive charges.



Fig. 2—Results of a Snubbing Shot

Snubbing may be accomplished by hand picking, by wedging, by mechanical means or by the use of explosives. This illustration shows the effect of firing a light shot in a shallow hole drilled near the center of the face a short distance above the undercut.

of Technology; one in the Naomi mine of the Hillman Coal & Coke Co. at Fayette City, Pa., and the other in the Banning No. 2 mine of the Pittsburgh Coal Co. at Whitsett, Pa.

Assuming that it is desired to improve the product of a given mine, how shall the necessary investigation proceed?

A thorough inspection of all working places is the first step. In this work the physical characteristics of the coal bed, particularly as to friability, must be considered. Observations should also be made of the thickness and hardness of each bench, and the position, nature and thickness of the bands of slate and bone, also the character of the roof and bottom. Where shots are fired in working places their effect on the coal, roof and ribs should all be carefully observed. Inspections made in other mines working under similar conditions often prove of value and may furnish worthwhile suggestions for the solution of the problem in hand.

In mines where improvement in the quality of output is desired, a standard method of drilling and shooting is seldom in vogue. The placement and direction of shotholes with respect to the ribs, the roof, and to each other, vary widely. As a rule blasting charges are found to be excessive and not properly confined by a sufficient quantity of incombustible stemming. As a result evidence can frequently be discovered of blown-out shots. Entirely aside from the hazards attending such practices, the explosive has no chance to produce effective results. The coal will be found to be much broken and in many cases is not loosened in a manner suitable for loading onto mine cars.

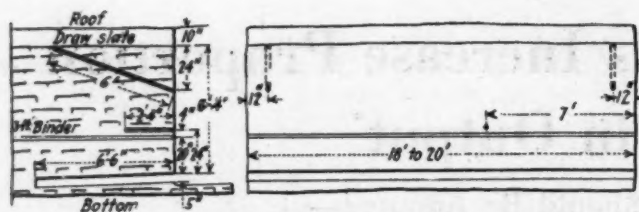


Fig. 3—Placement of the Snubbing Shot

In this case the snubbing shothole was drilled 2 ft. 4 in. deep and placed 2 ft. above the kerf and 7 ft. from the right hand rib.

When these observations have been completed, formulation of a new system which may lead to a standard practice in drilling and blasting may be commenced. The method of shooting should no longer be left to the judgment of each individual miner. The quantity of explosive loaded into each hole will also have to be standardized. Different methods must be tried out under strict supervision and, if possible, the coal produced should be screened separately so as to ascertain which practice yields the maximum percentage of lump.

Investigations in the southern Illinois mine referred to continued for more than two months before a suitable blasting method was evolved. During this time no attempt was made to change the practices followed by the miners. During the first month after the standard method was adopted no improvement was noticeable in the quantity of 6-in. coal. During the second month, however, better results became apparent and an increase of 1.53 per cent above the average of the ten months prior to the commencement of the investigation was noted. Some of this improvement may have resulted from the use of 1½-in. diameter cartridges in place of 1¼ in., which they supplanted. During the second month the lump coal was increased by 2 per cent; this improvement unquestionably being due to the standard methods adopted together with the reduction in cartridge diameter. Through all subsequent months this improvement was sustained and the good results obtained were further improved by instructions given the miners, by closer supervision and by the co-operation of all interested parties, both mine officials and miners.

Close supervision of blasting and all the operations incident thereto is a major factor in any campaign to increase the percentage of lump coal. This should start before the faces are cut. A place that is properly cleaned before undercutting will give better results



Fig. 4—Tight or Buster Shot in a Slant Hole

Much of the coal loosened by this kind of a shot merely settles down in place without being thrown or rolled out upon the mine floor. It requires considerable pick work to dislodge it ready for loading.

than one in which the face overhangs and the corners are not square.

Fundamentally an explosive must have at least two free faces of coal to work upon in order to bring down the material properly. For this reason it is necessary to produce one of these faces artificially by either hand or mechanical undercutting or by an over-cut, middle-cut or shear. A shearing cut may also be used in combination with either one or both of the other operations. These cuts should be made as carefully as possible in order to obtain rectangular faces. Each cut must be uniform in depth and must not grip at the ribs. If the cut grips at the ribs the tendency is to grip the drillholes also. When such holes are charged and fired they do not bring the coal down in a satisfactory manner and since it is wedged at the ribs it does not roll forward into the working place. This fosters the natural tendency on the part of the miner to use excessive charges of explosive. Such charges do not improve conditions, while they shatter the coal seriously.

Gripped holes are frequently drilled beyond the cut

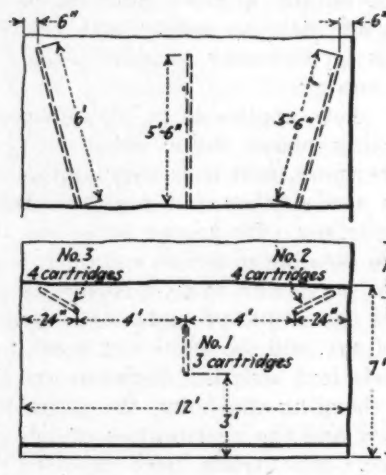


FIG. 5
Usual Entry
Drilling

This method of hole placement was extensively used in entry faces prior to the investigation described in this article.

as shown in Fig. 1. When fired, the explosive lying in the solid cannot perform a maximum of useful work, consequently it shatters the coal immediately about it and may exert undesirable force upon the roof. This is particularly the case if coal is left up as a roof protection. This constitutes an additional hazard in mining, for when the roof is injured in blasting greater difficulty and cost is entailed in preventing it from falling.

Tendency to make cuts gripped at the ribs is common to all types of mining machines, the breast machine included. However, with this latter type another difficulty is encountered, namely, that small pillars or noses of coal, commonly called "sprags," are liable to remain at the back of the undercut. With some types of turret machines, also, a place cannot be cut to uniform depth. It is possible, however, by the exercise of proper care, to cut the ribs in a direction parallel to the line of sights. When undercutting has been completed a still further improvement may in many cases be made by snubbing; that is, by increasing the height of the undercut along its outer edge by picking or blasting.

Where snubbing is practiced the coal usually rolls forward into the room when it is loosened by the blast. This breaks the material less than when the explosive is called upon to perform the double duty of both breaking the coal down and turning it over. In snubbing tests made at the Naomi mine an increase of 5 per cent—from 64.2 to 69.2 per cent—in the proportion of coal

passing over a 1½-in. bar screen was obtained. However, when these same tests were repeated in the Banning No. 2 mine, where the coal has different physical characteristics, snubbing did not always result in rolling it forward. In this mine the coal clung to the ribs and snubbing proved of no particular advantage. While hand snubbing produced more lump coal in the Banning No. 2 mine than was obtained from unsnubbed shots, the improvement was not sufficient to offset the quantity of slack produced in the cutting and snubbing operations.

Fig. 2 shows the result of a snubbing shot placed as shown in Fig. 3. The proportion of lump obtained with this snubbing shot was more than 1 per cent higher than that produced by hand snubbing. In a room 20 ft. wide several tons of coal is picked down in snubbing, only 40 per cent of which is 1½-in. lump. Almost 10 per cent of slack is produced in such a room as the result of both cutting and snubbing operations.

Tests should, therefore, be made before deciding

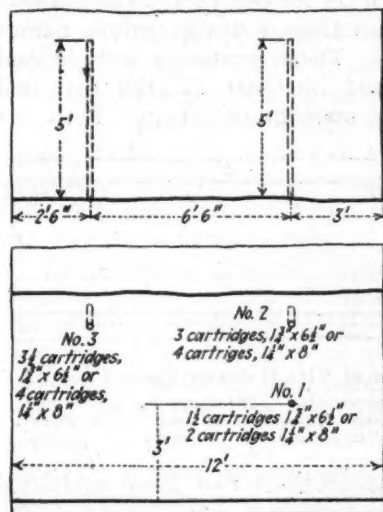


FIG. 6
Drilling
Adopted

This placement and drilling gave better results than that shown in Fig. 5 and was accordingly adopted as standard.

upon the adoption of snubbing in any particular mine. It will be found that where the coal does not cling to the ribs after being shot, snubbing will permit it to turn over instead of remaining in an upright position. The snubbing operation can be performed by explosives, by hand, either using wedge and sledge or pick, or by mechanical methods, such as air-driven punchers, drills or hammers, or by electric chain machines.

Undercutting does not yield its full advantages unless the cut is cleaned out before shooting. This detail should be given close attention. The miner or the machine runner's helper should be provided with a scraper or long-handled shovel for this purpose. Bugdust cleaned out from such a cut should be loaded before shooting.

According to L. E. Young, in a paper presented before the American Mining Congress, May 29, 1925, "Data are not available to warrant definite conclusions but the outlook is that a combination of shearing and snubbing will prove to be the most desirable practice for mechanical loading; for the success of mechanical loading depends very largely on how the coal is shot down." To this might be added the further fact that improvement will accrue to proper placing of the shot-holes, since this forms one of the most important technical details of blasting operations. In order to shoot a place satisfactorily, either for hand or for machine loading, the ribs must be cleaned properly

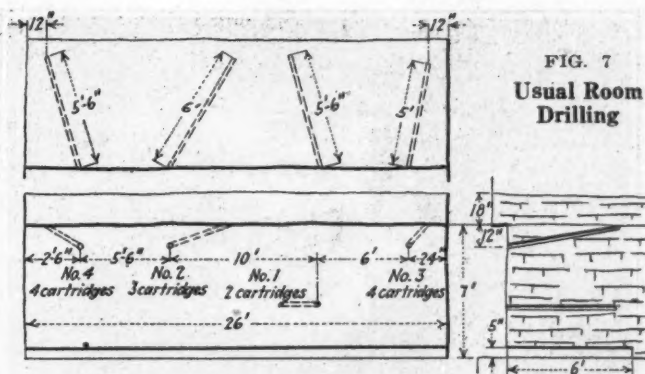


FIG. 7
Usual Room
Drilling

and the mass shot be so shaken up that it can be shoveled with as little pick work as possible. Improperly placed holes, which have to be heavily loaded in order to bring down the coal, will shatter the material adjacent to the explosive charge, while at greater distances from it fissures will be produced even in the material left in place. This adds to the difficulty of firing subsequent shots. The quantity of coal thus shattered decreases as the placement of the holes is improved, while simultaneously the quantity of explosive necessary will be decreased.

Proper placement of shotholes will depend upon the texture of the coal and the direction and nature of the face and butt cleats. In the Banning No. 2 mine, tests were conducted with working places 10 and 18 ft. wide on both the butts and faces. Shot holes were placed in the same manner for each test and the same brand of explosive was used. As might have been expected, the narrow butt workings gave the poorest results, 54 per cent of lump, while the wide faces afforded the best.

Shotholes that slope up at an appreciable angle, such as are commonly employed in the Pittsburgh bed, have many disadvantages, which will be discussed later. Fig. 4 shows the result of firing a tight shot in a wide butt working.

In the tests in the Pittsburgh bed, where the coal mined ranges from 6 to 7 ft. high and the working places were 10 ft. wide in entries and 20 ft. wide in rooms, it was found that only two holes were necessary. In most places where lump coal is an important consideration, better results are procurable by using only two holes. Where the coal is of a tougher nature, however, especially if it becomes necessary to use heavy charges of explosive, it is found better to employ more holes charged lighter. A common practice followed in the Pittsburgh bed is to place the holes from 12 to 15 in. from either rib and 2 ft. below the draw-slate. Such holes are drilled parallel to the rib but sloping upward toward the roof at such an angle that the farther end is about 4 in. below the draw-slate and 6 in. in front of

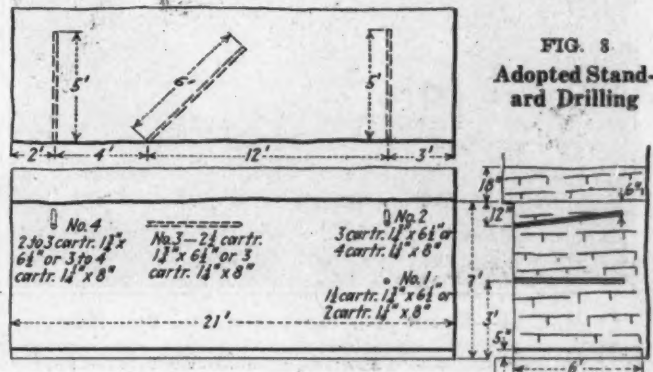


FIG. 8
Adopted Standard
Drilling



Fig. 9—Result of a Tight Shot in a Slant Hole

This coal merely is cracked and will require quite a bit of picking to bring it down ready for loading out. This imposes much more work on the miner than a shot that rolls the coal well out on the floor.

the rear of the under-cut. In other words, a vertical line dropped from the rear end of the hole would reach the kerf 6 in. ahead (that is, nearer the face) of the back of the under-cut. As a rule about 2-in. holes are drilled. These are commonly employed in the coke regions of Pennsylvania where lump is no particular object. One hole, known as a "buster" or breaker shot, is placed at the center of the face, or at some point between the rib holes.

As a rule, in narrow work the necessity for a third hole will depend largely upon the texture of the coal. In southern Illinois where the cleats are less pronounced and the texture is of a tougher nature, a third hole was drilled, as shown in Fig. 5. After making a number of tests it was found advantageous to place No. 1 hole 3 ft. above the bottom and the same distance from the rib. This was drilled relatively flat, as shown in Fig. 6.

In the No. 6 bed of southern Illinois the "blue band," a streak of hard gray shale, about $1\frac{1}{2}$ in. thick, occurred in the mine investigated at a uniform height of approximately 18 in. above the floor. This had to be considered when placing the shotholes. Presence of this blue band led to the adoption of snubbing, usually accomplished by firing a snubbing shot. The hole for this shot should be drilled in an almost horizontal position, as shown in Fig. 7. Fig. 8, however, shows the method of drilling finally adopted as standard. Four holes are used, their



Fig. 10—Result of a Tight Shot in a Flat Hole

In this case the coal is much more broken than in Fig. 9. However, snubbing before shooting probably would have improved the results attained.

numbers on this drawing indicating the order in which they are fired.

Side holes should always be drilled parallel to the line of sight and should be from 1 to 3 ft. from the rib, depending on the kind of shear which they will produce. Tests made in the Pittsburgh bed showed that for a tight shot a distance of 12 in. was most advantageous, both from the standpoint of lump production and that of obtaining a good shear. Better results, however, were obtained in the tougher Illinois bed with holes placed 3 ft. from the rib.

Relatively flat holes drilled 10 in. below the top of the coal produced 5.1 per cent more lump than did those started 24 in. below the top and slanted upward. Fig. 9 shows the result of firing a tight shot with a slating hole, while Fig. 10 displays the result of the same kind of a shot with a flat hole placed as shown in Fig. 11. The results of a butt shot are shown in Fig. 12.

No hole should ever be charged with a greater amount of permissible explosive than the limit prescribed by the Bureau of Mines, or $1\frac{1}{2}$ lb. per shot. The present published list of permissibles contains brand names of about 150 explosives. Those commonly used in coal mining are to be found in Class 1a, the principal ingredient of which is ammonium nitrate. Both the

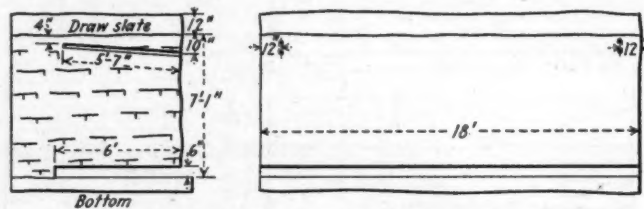


Fig. 11—Placement of Flat Holes in Room Face

No snubbing was here attempted. Pitching the holes flat or nearly so allows the explosive to exert its force in a direction at right angles to the bedding planes of the coal.

safety and physical characteristics of these explosives have been tested by the Bureau.

Permissible explosives possess three characteristics which influence their production of lump coal, namely, density, unit defective charge, and rate of detonation. The Bureau publishes the weight in grams of the $1\frac{1}{4}$ x 8-in. cartridges of each explosive. These weights vary from 137 to 181 gm. or more, corresponding to a stick count of 165 to 125 per 50-lb. case. In the lighter brands $3\frac{1}{2}$ sticks of $1\frac{1}{4}$ x 8-in. size weigh about a pound; in the heavier varieties about $2\frac{1}{2}$ sticks. The lighter a cartridge the greater will be the distance along the borehole throughout which the explosive force generated by it will be distributed, provided a unit defective charge is considered. The unit defective charge is that weight of an explosive in grams which will give the same swing on the ballistic pendulum as 227 gm. ($\frac{1}{2}$ lb.) of the 40 per cent, straight nitroglycerin dynamite adopted as a standard by the Pittsburgh testing station of the Bureau of Mines.

It has been found by tests conducted on five different brands of explosive, used under identical conditions but in quantities proportioned according to their respective defective charges, that each explosive brought down the same quantity of coal, with, however, different proportions of lump. The rates of detonation of these explosives vary and to this was attributed the difference in the percentage of large size produced.

The rate at which a file of explosive detonates in feet or meters per second is known as its rate of detonation. Fig. 13 shows the relation between the rate of detona-

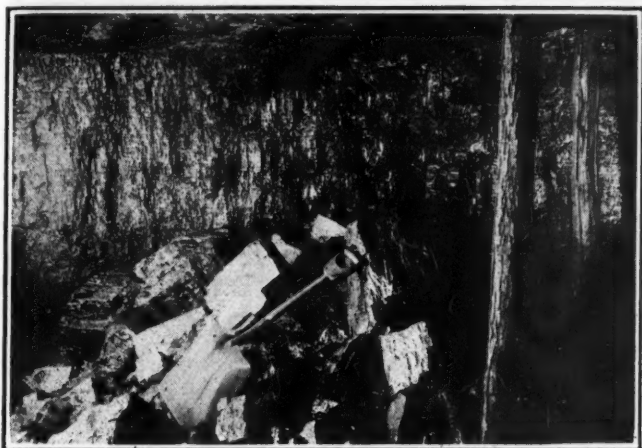


Fig. 12—Result of a Butt Shot

At many, if not most, coal operations the percentage of lump coal in the mine product determines the margin of profit that can be made, because the lump is the only grade that can be sold at a price appreciably exceeding the cost of production. Apparently this shot produced a satisfactory proportion of this size.

tion and the percentage of lump coal produced in the five tests made. The highest point of these graphs indicates the permissible explosive having the detonation rate most suitable for the physical texture of the coal mined. Any explosive having a detonation rate either greater or less produces a decreased percentage of lump, this decrease being proportional to the variation in the detonation rate.

In loading a borehole in coal all the cartridges required should be placed together at the rear of the hole with the primer (the cartridge containing the detonator) placed last or nearest the collar. The fulminate end of the detonator should point toward the main body of the charge. A wooden tamping stick should be used to push the cartridges home. Incombustible stemming only should be employed, as coal dust or slack invites disaster by explosion. Moist clay forms an excellent stemming material and can be made up into dummies. Where a plastic material is not available, however, the stemming may be placed in tamping bags. The first two dummies should be pressed lightly against the explosive charge, while the remainder of the stemming should be tamped forcibly into the drill hole, which should be filled to its mouth. In firing such a charge a lead wire not less than 100 ft. in length should be employed. The shotfirer should never detonate a shot except from some point where he cannot be injured. Wherever possible it is good practice to fire one hole at a time and load out the coal brought down by it before firing the next shot. Tests in a Pennsylvania mine have shown that when all the coal loosened by the tight or buster shot was loaded before the butt, or

Fig. 14—Tight Shot With Air Spacing

In loading this shot a wire spacer was interposed between the explosive charge and the stemming. This afforded a cushion against which the explosive might act. The explosive force thus was spread over a larger internal area of the borehole than would have been the case had the spacer been omitted.

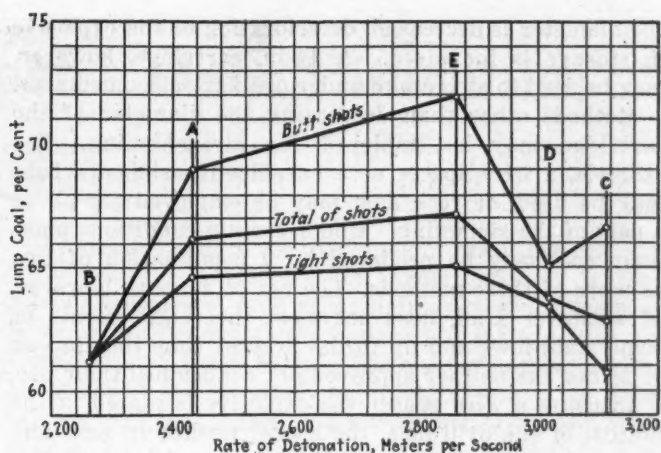
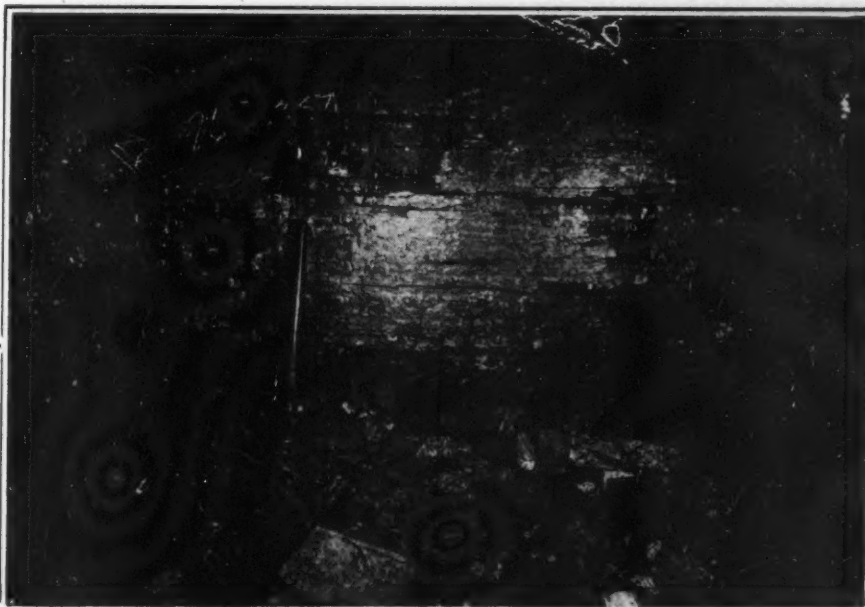


Fig. 13—Influence of Detonation Rate on Proportion of Lump Produced

Naturally, tight shots produce less lump than butt shots. A certain rate of detonation also tends to make the percentage of lump a maximum. Any rate greater or less than this critical speed will have an adverse effect on the size of the coal produced.

second shot, was detonated, 2.6 per cent more lump coal was produced than when only about half the coal loosened by the tight shot was loaded out before the second shot was detonated.

As a rule, best results are attained when cartridges of appreciably less diameter than the hole into which they are loaded are employed. In the Illinois tests where 2-in. holes were loaded with $1\frac{1}{4}$ x 8-in. cartridges, in place of $1\frac{1}{4}$ x 6-in., because of the excessive quantities of explosive used prior to the tests, the substitution could be made on a stick-for-stick basis. Where only a proper charge of $1\frac{1}{4}$ x 6-in. cartridges have been employed, about one more cartridge of the $1\frac{1}{4}$ x 8-in. size was necessary. By this means the air-space as well as the length of the charge was increased. Theoretically, the use of a cartridge of small diameter should result in the production of a greater percentage of lump coal, because when the same weight of charge is used the smaller diameter greatly increases the length of charge.

Quantitative tests have shown that when 1-in. cartridges were substituted for those $1\frac{1}{4}$ in. in diameter, 4.9 per cent more lump passing over a $1\frac{1}{4}$ -in. screen was produced. In actual practice, however, a cartridge as small as 1 in. should hardly be employed, because, as

the diameter is decreased, deterioration of the explosive in storage is increased. A 1½-in. cartridge, however, may be used to advantage under ordinary circumstances.

Methods other than decreasing the diameter of the cartridge may be employed for aircushioning. For example, a wire spacer or a paraffined pasteboard tube may be used, or rock dust may be employed for all or a part of the stemming. Under certain conditions more lump coal may be produced by a combination of two or more of these methods. The use of spacers, however, of whatever kind, does not meet the requirements of some state laws and up to the present time the Bureau of Mines has neither approved nor condemned their use.

In using a wire spacer the explosive is placed in the bottom of the drill hole, the spacer pushed in next and the remainder of the hole tightly tamped to the collar with clay stemming. By this method an increase of 5.4 per cent in lump coal has been obtained. Fig. 14 shows the result of a tight shot loaded in this manner. An increase of 7.4 per cent in lump was obtained by combining this method with snubbing. Fig. 15 shows the result of a tight shot and Fig. 16 that of a butt shot with this type of loading.

Investigations have also been made with rock dust stemming and methods of loading that comply fully with the statutes of Pennsylvania, which require that a hole must be tamped solidly with incombustible stemming throughout its entire length. For this reason, in the test all dummy cartridges were made of the same diameter as the hole, which in turn was entirely filled. Two different rock dusts were employed, namely, a limestone and a shale dust. About 85 per cent of each variety would pass through a 200-mesh screen. Both dusts were tested with a 6-in. clay plug tamped in the collar of the hole. The limestone dust was also tried without clay plug and with one 24 in. long.

Under similar conditions of tamping, the limestone gave a higher percentage of lump coal than did the shale dust. This variation may be explained by the different actions of the two materials. The limestone appeared to act as a medium for transmitting the force of the explosion uniformly throughout the entire length of the drillhole, while with the shale the action more nearly approximated a cushioning effect due to the packing of the dust into a smaller volume.

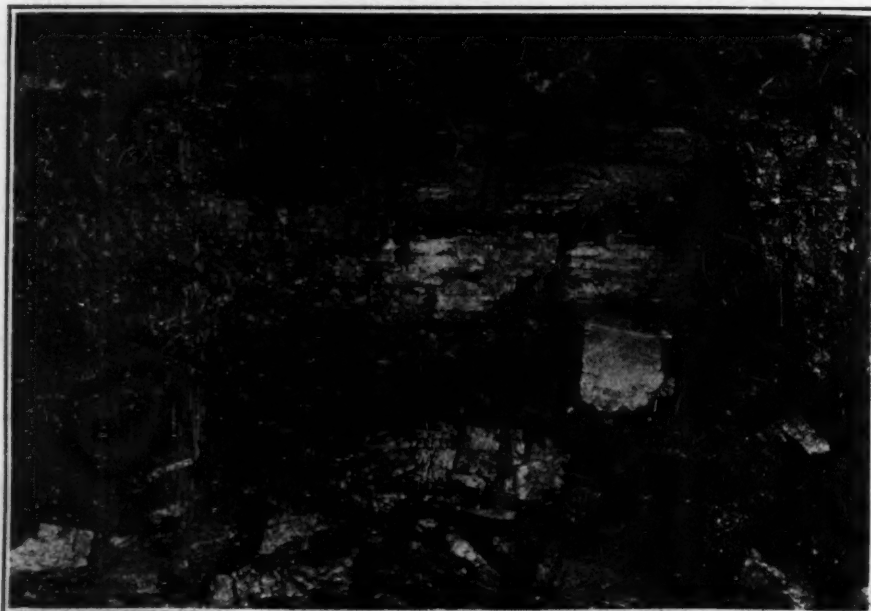


Fig. 15—Effect of Both Snubbing and Air-Spacing

This was a tight shot, yet as may be seen a fair proportion of lump was realized. Any one improvement in shooting may appreciably increase the proportion of lump yielded, but these betterments are not addable, that is, total improvement secured from two improved practices will not amount to the sum of the betterments attributable to these methods used singly.



Fig. 16—A Butt Shot Snubbed and Air-Spaced

Note the large percentage of lump coal produced. Such results as these indicate emphatically that the realization for the total output may be appreciably enhanced by departing from the "by-guess-and-by-gosh" methods followed by most miners in the matter of shooting, and substituting therefor carefully systematized practices that have been painstakingly established as the result of actual experiment.

When rock dust stemming was employed in a slating hole, 4.3 per cent more lump coal was produced than with moist clay, while 5.1 per cent more large material resulted from a flat hole than was obtained with moist clay in a slant hole. However, when these results were compared with those obtained with a flat hole and moist clay stemming, the increase was only 0.8 per cent.

After a standard method of shooting has been worked out carefully and found applicable to the majority of places within a mine, it should be put into effect and rigidly adhered to. A standard method properly enforced, even though it may not be the best available, is far better than as many different ways of shooting as there are miners employed.

Coal mine executives desiring to increase the proportion of their lump product should carefully consider the following details: Drilling and shooting practices should be standardized and closely supervised. The ribs should not be permitted to grip the under-cut, which should be of uniform depth. All bugdust should be cleaned out of the under-cut with a scraper or long handled shovel before the face is shot. After each shot the coal brought down by it should be loaded out.

Side holes should not grip the ribs. All shot holes should be drilled parallel to the bedding planes. Overloading shotholes should be avoided; this will decrease the proportion of lump coal. Each hole should be tamped full with incombustible stemming material. If proper attention is paid to these details, an increase in the proportion of lump coal produced may be confidently expected.

Fordson Engineers "Span" Their Difficulties

By J. H. Edwards

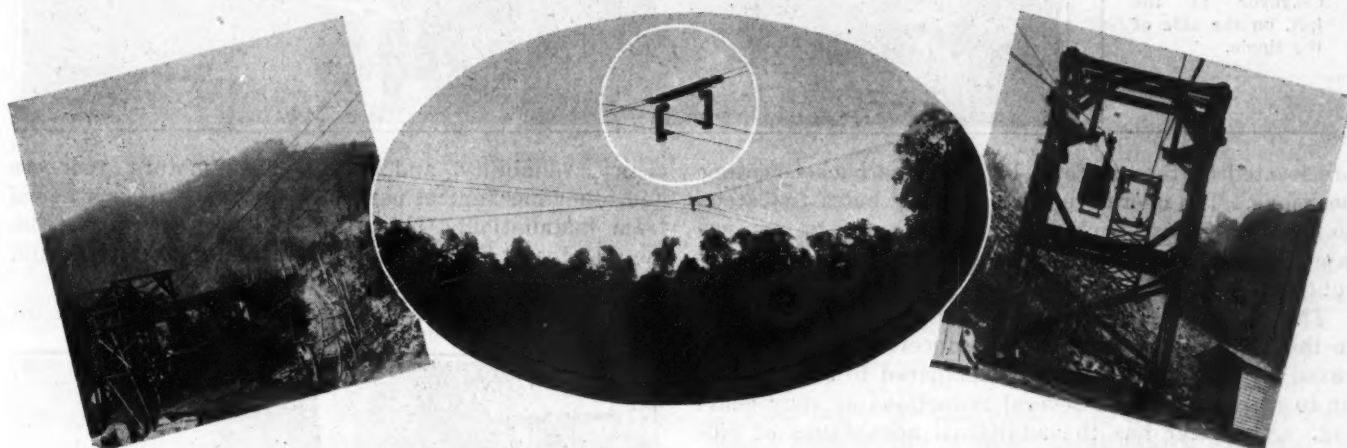
Associate Editor, *Coal Age*
Huntington, W. Va.

DISPOSAL OF MINE REFUSE by aerial tram is now commonly employed at many of the larger mines in the mountainous sections. Usually the tramway carries the material up over the top of a steep hill and dumps into the adjacent hollow. In such cases the track ropes are supported directly from towers located on either side of the valley.

A somewhat different set of natural conditions was encountered at mine No. 5 of the Fordson Coal Co.,

A double cable is used to support the aerial hanger. This hanger consists of a box girder about 10 ft. long having a sheave at each end. Neither of the suspension ropes is dead-ended at the hanger but instead both are looped around the sheaves. The saddles supporting the track ropes are fastened on brackets projecting from the vertical legs which are suspended from the short girder.

This tramway at No. 5 mine is one of five being



Tramway Carries Refuse 2,040 Ft. Over Route Requiring Two Aerial Suspensions to a Dump 685 Ft. Above the Tipple

The construction of supporting towers at every necessary point along the cableway was economically out of the question because of the contour of the ground. So at two locations suspensions were installed, one of them requiring a rope span of 860 ft. and the other a span of 1,045 ft. The

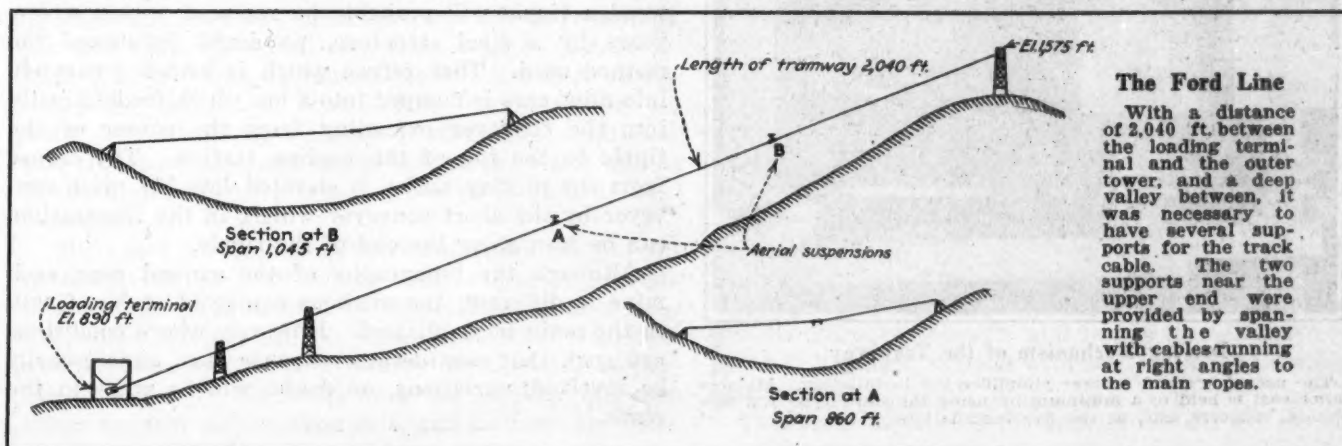
inset of the central illustration shows one of the suspension fittings which consists of a box girder about 10-ft. long with a sheave at each end and with saddle-carrying legs suspended to provide flexibility. The drawing accompanying this article shows the locations of the two aerial suspensions. In

the view at the right, taken from the operating platform at the dump, looking back along the line, smoke hides the aerial suspensions. Two buckets are used on the tramway, one going out loaded with 4,000 lb. of refuse, while the other returns empty to the tipple.

at Stone, Ky. There it was desired to dump the refuse along the center of a long gradually-ascending hollow, the mouth of which is close to the tipple. Because of the distance to the outer tower and the contour of the ground it was necessary to provide several intermediate supports for the track cables. Construction of towers for two of the four supports would have been exceedingly expensive, and, moreover, at these points towers would have been liable to damage from burning refuse. At these two points aerial supports are used. The ropes run at right angles to the track cables and are anchored on each side of the valley.

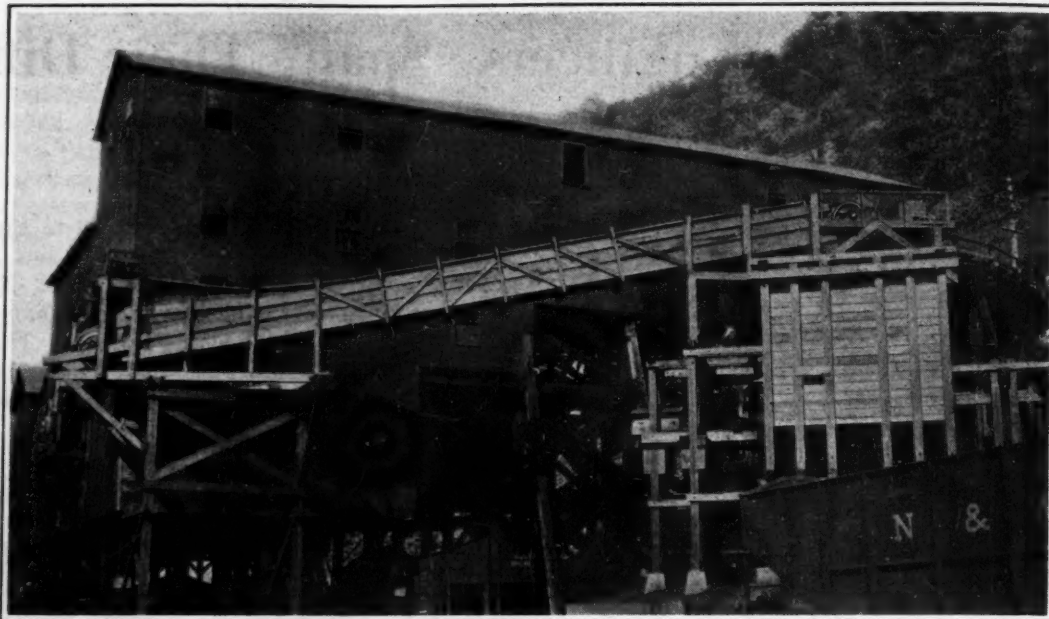
installed by the Fordson Coal Co. for refuse disposal. All are of the two-bucket type, one bucket going out loaded while the other returns empty. Except for the aerial suspension feature, a description of the No. 5 tramway holds good for those being installed at the other mines.

The bucket capacity is 50 cu.ft., or, expressed in another way, it holds approximately 4,000 lb. of refuse. The tramway is designed for the disposal of 50 tons per hour of material weighing 80 lb. per cubic foot. A feature of the design is the arrangement at the loading terminal for one-man operation. The electrical controls



Belt Feeds Rock to Tram Bin

This shows how the refuse is conveyed from the No. 5 tippie to the bin of the loading station. The cars of refuse are dumped in the tippie into a bin which feeds directly into the large conveyor. That coming from the picking tables is carried to the main conveyor by a small conveyor at the left, on the side of the tippie.

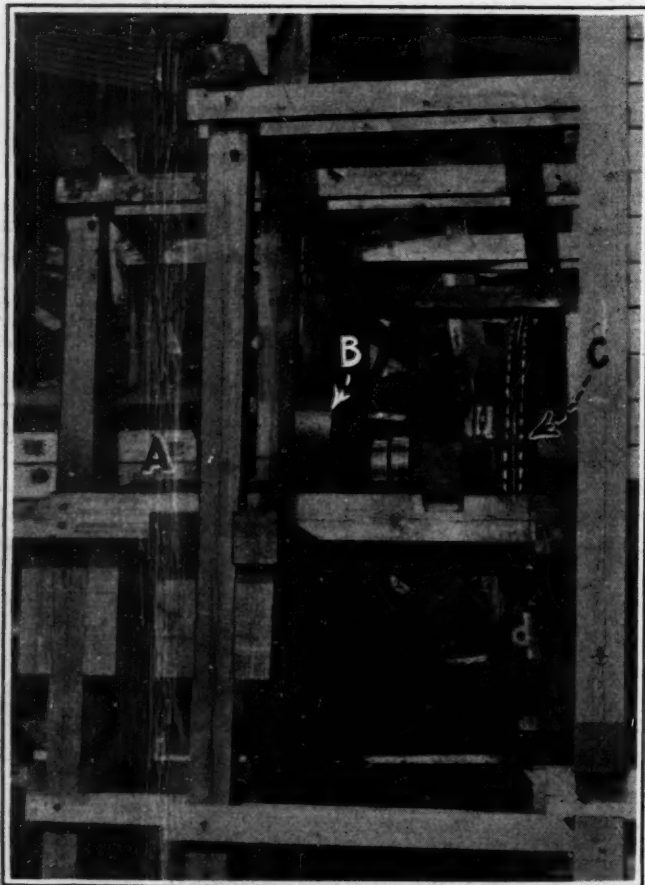


are located on the platform between the bucket-loading positions. The operative needs to move but a few steps to open the gates which fill the buckets and to manipulate the control and brake mechanism of the driving equipment.

The motor driving the traction cable is connected to the sheave through a speed reducer. Much space is saved by this arrangement as compared to a belt drive or to a drive through several reductions of spur gearing. A reducer has the additional advantages of effi-

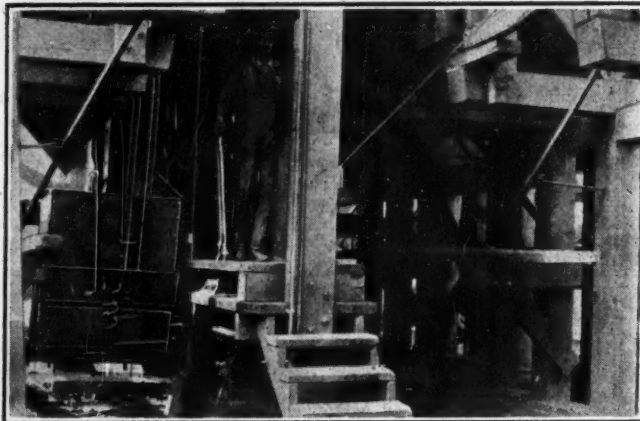
ciency, reliability, and safety. The motors, reducers and other mechanical parts are the same at each aerial tram installation. This is a decided advantage from the standpoint of successful operation, maintenance and repair.

Where the tippie is not modern it is usually difficult



Driving Mechanism of the Tramway

The use of a speed reducer simplifies the installation. Maintenance cost is held to a minimum by using the same type and size motors, reducers, etc., at the five installations.



At the Dump End of the Line

This shows the operator's platform under the bin at the loading station. The controller and brake lever are within 4 ft. of the gates through which the refuse is loaded into the buckets, thus providing one-man operation. The 50-cu.ft. buckets carry about 4,000 lb. of refuse.

to arrange for elevating the refuse to the bin of the bucket-loading station. An illustration shows how this was done at the No. 5 mine. The fact that the old wooden tippie will probably be replaced within a few years by a steel structure, no doubt influenced the method used. That refuse which is loaded separately into mine cars is dumped into a bin which feeds directly into the conveyor extending from the corner of the tippie to the top of the loading station. The refuse from the picking tables is elevated into the main conveyor by the short conveyor which, in the illustration, can be seen along the end of the tippie.

Although the topography of the ground near each mine is different, the methods employed at No. 5 will in the main be duplicated. However, where conditions are such that considerable expense may unnecessarily be involved, variations, no doubt, will be made in the plans.

Recovery Work at Rockwood Required Much Skill

After Explosion Killing Ten Men in Reopened Fire
Area of Tennessee Mine, Crews from Four
States Labored in Trouble Zone

By R. M. Lambie

Chief, West Virginia Department of Mines,
Charleston, W. Va.

MEN OF FOUR STATES on Oct. 22 took part in the recovery work that followed the explosion last summer in the Rockwood mine at the foot of the Cumberland Mountains in Roane County, Tennessee. The blast occurred at 5 o'clock on the morning of July 23 in the Rodgers Entry of the mine, killing ten men, including the mine superintendent, just as they were beginning anew a fight to extinguish a fire that had been sealed up for three months. Fire in the mine assumed such proportions that the affected zone had to be sealed off for three more months before the bodies of eight of the ten men could be removed. Picked men from Alabama, West Virginia, Pennsylvania and Tennessee did the work.

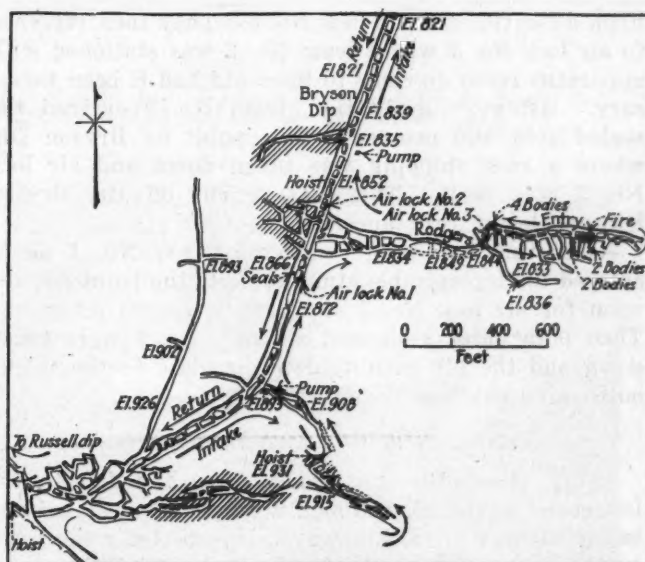
This mine is owned and operated by the Roane Iron Co. It was originally opened by Gen. John T. Wilder in 1868. The coal mined is the Sewanee seam. This seam has some unique features, some sections being on the pitch, others being level and irregular in thickness, ranging from 2 ft. to 30 ft. Owing to the uncertainty of the seam, no regular and uniform plan of development can be projected or carried out, as one can only be governed by conditions.

The mine is divided into three sections, each section having a separate ventilating current. The fan is located approximately 150 ft. above the level of the drift, and forces into the mine workings 150,000 cu.ft. of air per minute, which returns to the main entrance and two other openings back on the mountain where the coal outcrops. This mine liberates explosive gas irregularly, but is operated with open lights. Fire bosses make their examinations daily preceding the entrance of the workmen.

CONDITIONS IN THE RODGERS ENTRY

The Rodgers Entry, in which the explosion occurred, is turned off the Bryson Dip and is worked on the double-entry system. The entry dips rapidly from the mouth for 300 ft., then continues level. The air course to this entry is irregular, some points being 20 ft. below or above the level of the entry. For a distance of 600 ft. from the mouth of the entry there is room for only the heading, air course and sidetrack, due to rock faults on both sides. The coal area then widens. Rooms are turned to the right, and the air course meanders around following the line of fault. This irregularity of the seam presents some unusual problems in ventilation and transportation, and makes this an expensive mining proposition. All of the coal produced is used at blast furnaces.

The cause of the explosion is undetermined, but the consensus among local mining men is that an accumulation of gas was ignited by the rekindling of a mine fire. The fire had been burning since April 18, 1925, and had been sealed up for ninety days. After reopening the fire zone, the entire area was explored and men began to clear up the slate falls and load out the coke.



Map of Affected Area

The troublesome fire and the unexplained explosion occurred in Rodgers Entry, July 23, 1925. That part of the mine was sealed off at once and the bodies of eight of the ten men killed were left in the workings until Oct. 22 when the recovery work was carried out.

While this was going on heat and fire were discovered. Six men were detailed as water carriers and three were assigned to load out the burning coals. This work was in charge of the mine superintendent.

EIGHT BODIES LEFT ENTOMBED

Then came the explosion. The ten men were killed. The bodies of two of them, being only a short distance from the mouth of the entry, were found soon after. The smoke became extremely dense, and since it was apparent the fire was burning, it was deemed best to seal up these entries again, leaving eight bodies entombed.

It was impossible to place seals in Rodgers Entry at the point where they were formerly located, so a location 50 ft. outby the mouth of this entry was decided upon. Only two seals were required to seal the Bryson Dip and Rodgers Entry. Pipes were placed in these seals, and at weekly intervals air samples were taken and analyzed. Analyses showed a rapid decrease in the oxygen content with a heavy increase in methane. The sample taken on Oct. 21, 1925, showed the atmospheric condition inside the seals as follows: Carbon dioxide (CO₂), 3.3; carbon monoxide (CO), 0.0; oxygen (O₂), 0.7; methane (CH₄), 72.0 and nitrogen (N₂), 24.0.

BUILD AIR LOCK ON HAULWAY

A fresh air base was established 500 ft. outby the seals. Here all modern equipment for use in recovery work was assembled. On the morning of Oct. 22, an air lock was built on the haulway outby the seal. This air lock was a heavy frame of two-by-fours with four ply of heavy white duck. A door 42x30 in. was made in this air lock with a double-ply check inside and outside. At this point the air registered 10,000 ft. per minute. This being inadequate, it was necessary to regulate the current on the other two splits. This change increased the volume at the breakthrough outby the air lock to 22,000 ft. of air per minute. No. 1 seal was then broken through, and rescue team No. 1, composed of five men, entered with self-contained breathing apparatus.

This team explored a distance of 800 ft. and decided

upon a location for air lock No. 3. They then returned to air lock No. 1 where team No. 2 was stationed with apparatus ready to come to their aid had it been necessary. After a consultation, team No. 2 entered the sealed area and proceeded to a point on Bryson Dip where a rock stopping was taken down and air lock No. 2 was built. This was to cut off the Bryson Dip and lessen resistance.

After this had been completed, team No. 1 again entered the irrespirable atmosphere to the point decided upon for air lock No. 3 and built it before returning. Then both outer seals and air lock No. 1 were taken down and the air permitted to circulate to the points outby air locks Nos. 2 and 3.

VENTILATING CURRENT INTERRUPTED

Every precaution was taken from the fan to the innermost workings, and men were placed at stated distances along the travelingways. Unexpectedly the fuses on the electric line to the fan burned out. This caused an interruption in the ventilating current as it took some time to get the auxiliary steam fan in operation and the ventilation restored to normal. During this interruption a small quantity of methane leaked through the air lock as the pressure inside the seal was greater than the atmospheric pressure. Ventilation was conducted in the usual manner, that is, closing up the breakthroughs with temporary stoppings as the advance was made.

After cleaning out the gas to air lock No. 3, and

when all places in advance workings had been explored, this air lock was removed and the air conducted throughout the entire section. This made it possible for the stretcher bearers to go without masks to the points where the bodies were found by the rescue squads.

APPARATUS WORKED PERFECTLY

It took eighteen working hours to recover the bodies. Fourteen hours of this time was spent by the rescue teams under oxygen. All machines functioned perfectly, which showed extreme care on the part of the attendants at the base.

The men used in recovery work at Rockwood were these:

Team No. 1—W. H. Forbes, Huntington, W. Va.; Frank Cash, Birmingham, Ala.; George McCoy, Rockwood, Tenn.; Robert Lilly, Mount Hope, W. Va., and R. M. Lambie, Charleston, W. Va.

Team No. 2—W. J. German, Huntington, W. Va.; Clifford Saxon, Birmingham, Ala.; Harry Burdelski, Pittsburgh, Pa.; Arthur McNeeley, Rockwood, Tenn., and R. M. Lambie, Charleston, W. Va.

Other apparatus men who alternated with those on rescue squads were: George McCaa, Pittsburgh, Pa.; Dr. Merryweather, Birmingham, Ala.; W. S. Wilson, Rockwood, Tenn.; George Harden, Rockwood, Tenn., and Wm. Yant (Chemist), Pittsburgh, Pa.

Men in charge of the base were: C. O. Morris, Charleston, W. Va., and Stockton Gaines, Charleston, W. Va.

Inspectors patrolling intake and return were: Zach Evans, Handley, W. Va.; Andrew Holden, Dayton, Tenn., and George B. Thom, Decherd, Tenn.

Oxyacetylene Apparatus Has Standardized Connections

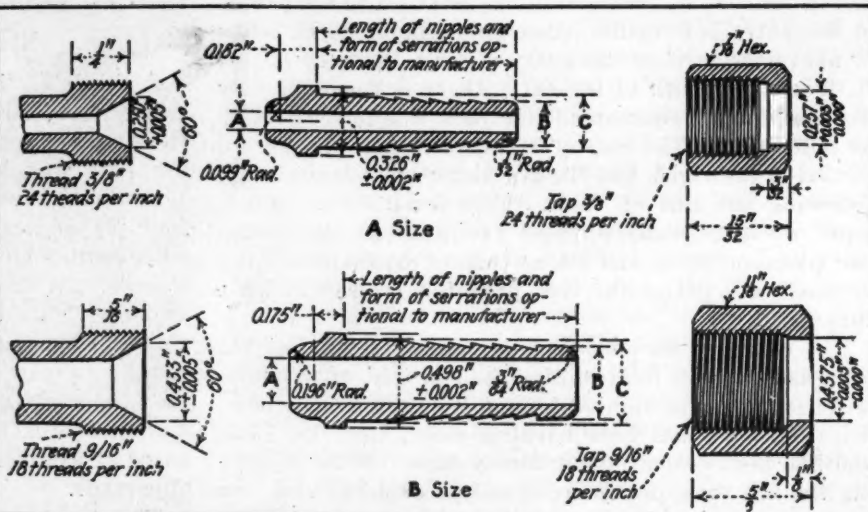
In the past, users of oxyacetylene welding and cutting equipment have experienced inconvenience when attempting to use the product of one manufacturer in conjunction with that of another. Thus in many instances a torch or hose of one make could not be attached to the regulator of another maker without the use of a special adapter. The trouble experienced was exactly analogous to that encountered before the standardization of bolt threads when much time was lost in every industrial establishment through the attempt of the workman to mate a "nut that was a little bit too small and a bolt that was a little bit too big."

The need for standardization of oxyacetylene equipment, particularly hose connections became so urgent that several manufacturers of such apparatus have agreed upon certain standard dimensions which will be adhered to by all, on and after Jan. 1, 1926. These dimensions are shown in the accompanying drawings, the A connections being for small torches and the B for large ones. Certain dimensions on these connections are optional with the manufacturer such as the length, number and contour of the hose serrations, but all threading and other important details are standard.

One other detail has been standardized. In order to eliminate the possibility of placing an oxygen hose on a fuel gas nipple or vice versa, righthanded threads have been adopted for oxygen connections and left-handed ones for gas.

Standard Design of Hose Connections

All vital dimensions are made standard so that equipment from different manufacturers can be used without necessity for adapters. Oxygen connections are made with right hand and gas connections with left hand threads. All possibility of getting such connections interchanged is thus obviated.



Mining and Preparing Coal in the Far West



Another New Mine in the Pacific Northwest—Black Carbon, Near Seattle, Wash.

This plant of the Black Carbon Coal Co. in Pierce County, about 45 miles from Seattle, has been progressing through various stages of construction for three years. Now it is getting into its stride and is expected to produce 250 tons a day. Six seams of coal underlying the company's property contain more than 10,000,000 tons.

Mining is by hand on the chute-and-pillar system in coal that normally pitches about 60 deg. as shown in No. 5. By motor haulage (No. 4) the mine's output is delivered to the slope and hauled out by an endless rope. Drop bottom cars deliver into bins feeding balanced vibrating picking table screens (No. 2) separating the

coal into three sizes to be washed in jigs. The discharge end of one is shown in No. 3. From the jigs all the coal goes back into a common drenching tank. It is removed by a 50-ft. flight conveyor over a fine screen and sprayed under high pressure before it reaches a revolving screen making three sizes for loading.

Union Pacific Coal Co.'s Code of Standards—II*

Lighting and Light Wires

1. Electric lamps shall be installed at all partings, switches, passageways that cross haulageways, workrooms, pumps, hoist and motor-generator rooms, stables, transformer vaults and such other points as the mine foreman may direct.

2. Semi-portable lamps shall be fitted with rubber-clad cord (similar to Tirex), and the lamp shall be protected with a wire guard having wooden handle, similar to Western Electric Co.'s Catalog No. 2,590.

3. Lighting wires shall be attached to trolley or power lines by Universal test clip No. 27, which will permit of the circuit being disconnected while removing the base of a broken lamp.

4. All wiring shall be supported on porcelain insulators, and when the track is used as a return for the lighting circuits the return wire shall be attached to the track by bonding to the rail or by attachment to regular track bonds. (See Fig. 8.)

5. The ground connection shall be made of not less than No. 8 B. & S. gage copper wire which shall be buried

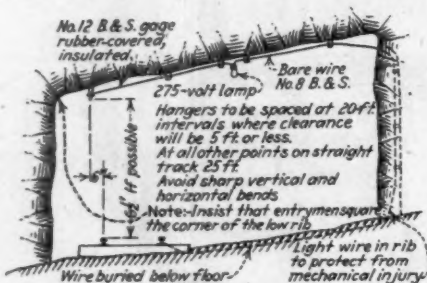


Fig. 8—This Lessens Danger

The haulage system of a mine is so important that it is worth while to install its feeder and trolley circuits in a safe manner.

below the surface of the floor and carried to the side of the entry and thence on porcelain insulators to the roof.

6. All electric lamps connected to trolley lines for lighting underground shall be of 275-volt rating. Lamps supplied with alternating current shall be designed for 250 volts.

7. All sockets shall be of the keyless weatherproof type (similar to General Electric Catalog No. 60,666). Light wiring shall be not less than No. 12 B. & S. gage rubber covered and shall be supported on porcelain insulators or split knobs and held free from timbers, coal and rock.

8. Wires may be fastened to glass insulators, mounted on screw or wooden pins driven into the roof or the wire may be carried on a No. 3½ W. G. porcelain insulator fastened to timbers by means of 2x3½-in. lag screws with a ½-in. cut washer under the head.

9. Lamp bulbs shall be replaced only

*This is the second of a series of articles giving the Code of Standards put into effect by the Union Pacific Coal Co., at its operations in Wyoming. The first article appeared in the Dec. 10 issue and the remainder of the code will be published in future issues in this form that permits of easy filing.

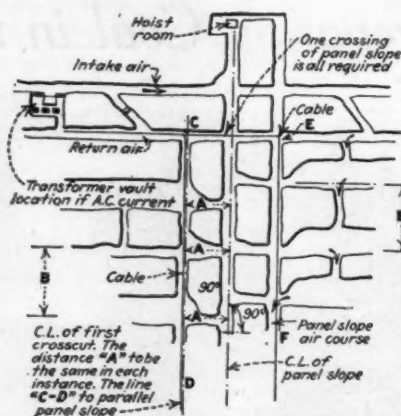


Fig. 9—Simplification and Economy Go Hand in Hand

This sketch shows a panel arrangement with the alignment of crosscuts on the opposite side of the slope from the air course, thus the necessity for cables on the slope is eliminated. With standardized room centers the cables CD and EF may be removed intact with supporting and controlling fixtures to any other panel.

by the mine electrician or a person authorized by the mine foreman.

10. In two-wire circuits, wherein one wire constitutes a permanently grounded return, this wire shall be installed in the same manner and afforded the same support and insulation as the live or supply wire.

11. All branch two-wire circuits leaving any main circuit shall be provided with a double-pole, fused switch of the safety inclosed type to protect the wires leading from it and for cutting off all current within the branch circuit.

Cables and Power Lines

1. All power conductors shall be carried in manways or passageways that are ventilated by intake air. No wires or cables will be allowed in return air courses.

2. All wires or cables crossing slopes, panels or travelingways shall be carried underneath the road bed in a

trough or in channels in the roof made to such a height as will render them safe from accidental contact.

3. For alternating current mining machine supply lines in panels 3-conductor rubber-insulated cable shall be used from transformers to room necks. This cable shall be supported by Fletcher mine wire holders, and shall terminate in suitable room switches at the room necks.

4. In panels the cable is to be carried in the passageway parallel to the panel slope. In the rooms on the opposite side of the panel slope, the first crosscut is to be driven parallel to the panel slope and at a standard distance from its center line, thus giving a passageway on both sides of the panel. This will eliminate the hazard of making numerous crossings over the slope with live cables. The same system will be observed where two-wire circuits supply mining machines. (See Fig. 9.)

5. All 2,200-volt power circuits leading underground shall be provided at the surface with a combination disconnecting switch and fuse in each conductor, capable of opening the circuit under load. Such switches must be provided with adequate lightning protection. (See Fig. 10.)

6. All 2,200-volt cables in damp or wet places, in boreholes or underground, shall be lead covered and armored or otherwise effectively protected from abrasion. The armor shall be electrically continuous throughout and shall be effectively grounded every 500 ft.

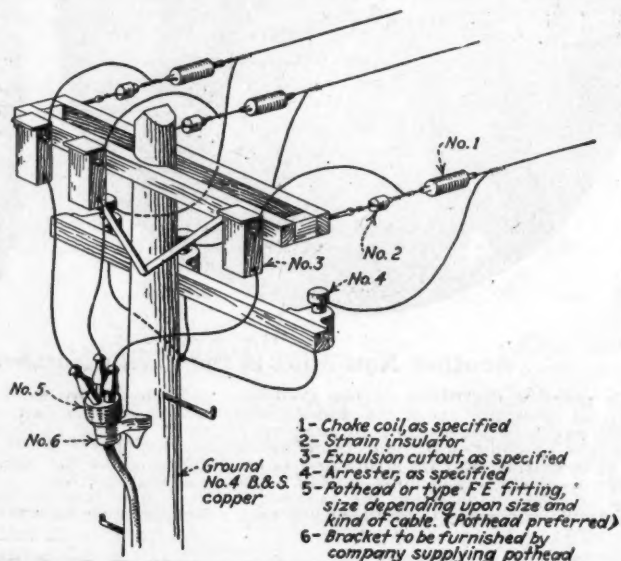
7. Buried cables shall be lead sheathed and armored or placed in metallic conduit.

8. In permanently dry mines the lead sheath may be omitted if the cable is provided with a rubber covering around all conductors and enclosed in a metallic armor to protect it against injury by abrasion.

9. Cables in entries or passageways shall be supported by cable rings on messenger wire and shall be electrically bonded thereto at intervals not

FIG. 10
Protect All
Cables

Wherever 2,200-volt energy must be taken inside the mines each wire should be protected by a fuse and lightning arrester. Provision should also be made to open any or all of the line wires by means of a switch or group of single switches.



exceeding 500 ft. The supporting messenger shall be well grounded.

10. In future development all 2,200-volt cables shall be carried to a central distributing point and branch lines be provided with automatic oil circuit breakers.

11. Cast-iron tee boxes shall inclose connections where short lengths of 2,200-volt cables attach to main supply cables. These boxes shall be electrically bounded into the cable sheath circuit so that this circuit shall be electrically continuous between cables.

Signal and Phone Lines

1. Telephone lines shall not be installed on the same side of an entry as power lines.

2. Every precaution shall be taken to prevent contact of telephone wires with power lines.

3. Telephone and signal lines between the mine openings and buildings shall be in underground conduit wherever there is possibility of their coming in contact with high-voltage lines through accident to either the high-voltage line or to the signal or phone line.

4. Telephone and signal lines must be kept apart from power lines.

5. Mine telephones to be of Western Electric Co.'s Type 1336J or its equivalent.

6. At points where wires enter the mine they shall be protected by a Western Electric Co.'s Type 58 A.P. protector installed in an iron box which must be effectively grounded.

7. Telephone wires shall be iron, No. 12 Birmingham wire gage, rubber covered and shall be supported in the same manner as low-voltage power lines.

8. All slope signal wires shall be No. 8 Birmingham W. G. or its equivalent, and shall carry not more than 30 volts.

9. Supports for slope signal wires shall not be more than 25 ft. apart and the space between wires shall be 6 in. All wires must be drawn taut and extend the full length of the slope.

10. On main slopes over 1,000 ft. in length duplicate signal wires shall be installed.

Rules for Wiring Underground Stations

The following rules include such places as in hoist, pump and motor-generator set stations, stables, repair rooms, mine foremen's cabins, tool-rooms, etc.

1. Wiring for lights shall be installed in metal conduit.

2. Each room shall be provided with a safety type of entrance switch.

3. Wire shall not be smaller than No. 12 B. & S. gage, and shall be rubber covered.

4. Ceiling lights shall be in fixed positions.

5. Receptacles shall be installed on opposite sides of the room for attaching semi-portable lamps where necessary.

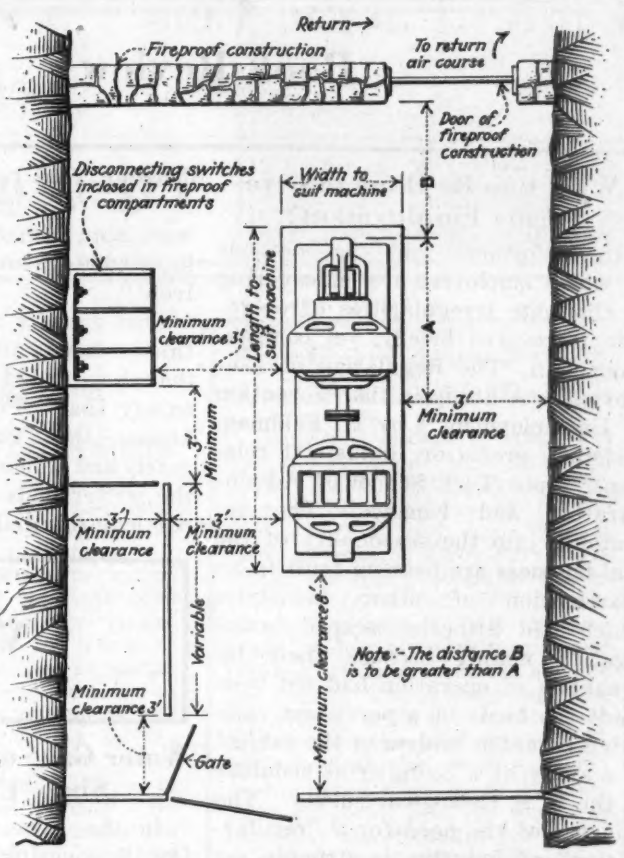
6. Not more than six lights shall be installed on any one circuit.

7. All conduit shall be grounded.

8. Rooms containing motor-generator sets, pumps or hoists shall be ventilated with intake air at all times, and shall be located between intake and return

FIG. 11
Elbow Room
Makes Repairs
Easier

To provide adequate space for the operation and repair of substation equipment special consideration must be given to the arrangement of the machinery. The sketch shows the minimum clearances around the machine and circuit equipment also the design of the station with relation to air courses.



air courses in order that fumes or smoke given off at times of burnouts may be diverted to the return air course.

9. Cables leading to motors and particularly those remotely situated from other points of disconnection shall be provided with expulsion type cutouts (General Electric Catalog No. 106,918 or its equivalent.)

10. No wiring for lights shall be carried within 5 ft. of any temporary powder storage room.

Hoists

1. Permanent hoist rooms are to be fireproofed, in a manner determined by the general superintendent. (Temporary locations are those wherein the machine will be in service in one position less than 6 months.)

2. Hoist motor, controller, control equipment, oil switches, cable sheaths, current, potential, power and lighting transformers, switchboard frames, resistance boxes, and supporting frames, shall be grounded as heretofore provided.

3. Resistors shall be mounted on concrete bases or supported on pipe frameworks so that the bottom of the resistor will be at least one foot from the floor and shall be 24 in. removed from the coal rib so as not to present a fire hazard.

4. Resistors shall be protected with a suitable inclosure.

5. Control wiring, unless installed in metal conduit, shall have slow-burning insulation. All conductors composing such wiring shall be so laid that they may be readily traced and identified.

6. Wires connecting resistors and controllers or controller panels shall have slow-burning insulation. Wiring

between motors and liquid controllers shall have rubber insulation.

7. Plans shall be developed for each district so that each hoist together with its complement of conduits, wires, cables, guards, floorplates, etc., may be removed in their entirety to new locations.

8. Primary contactor panels carrying 2,200 volts shall have all live parts completely inclosed in a box of transite or asbestos board.

Motor-Generator Set Rooms

1. For general arrangement of motor-generator set rooms see Fig. 11.

2. Special attention shall be paid to location relative to load center in order that power may be distributed in two or more directions.

3. Ample space shall be provided around the apparatus to permit easy handling in case of dismantling for repairs.

Switchboards

1. All switchboard frames are to be made of pipe or other metal supports with panels of incombustible material possessing insulating qualities suitable for the voltage carried.

2. Switchboards shall be given a 3-ft. clearance at the front, back and ends.

Panel boards shall have a clearance of 2 ft. from the floor.

3. When the potential behind the switchboards exceeds 275 volts, the rear of the board shall be protected by gates and marked by appropriate signs.

4. All switchboard mountings, instruments, transformers and instrument casings shall be grounded.

5. Conductors shall not cross the passageways back of switchboards except below the floor or at a height of at least 6½ ft. above the floor.

Book Review

What Can Be Done to Give Steady Employment?

Unemployment and the methods by which employers are endeavoring to eliminate irregularities of operation is covered briefly, yet compendiously in "The Regulation of Employment, A Study in the Prevention of Unemployment," by H. Feldman, assistant professor, industrial relations, Amos Tuck School of Administration and Finance. The researches into the seasonality of the coal business are bearing fruit in an examination of other industries which had hitherto escaped investigation mainly because their inequalities of operation had not been made the basis of a persistent campaign by union leaders or the subject of a study by a compiler as sedulous as the U. S. Geological Survey. The evidence of the need for a "regularization" of industry is strongly set forth in this volume by Mr. Feldman, and any one who reads it will be convinced that the coal industry is not the sole and, possibly, not the most grievous offender. The book contains 437 pp., is 5½x8½ in. in size and is published by Harper Bros., New York City. The price is \$3.50.

MANY INDUSTRIES HAVE "OFF" SEASONS

"In a recent study of printing," says the author, "one plant is cited which employs 2,700 persons in rush seasons and drops off to 1,500 in dull; another which lays off 1,100 employees for periods of three months twice a year, therefore having a fluctuating payroll varying from 1,800 employees to 700 employees. Census figures for the United States sugar industry in 1919 show 4,661 persons employed in March and 27,064 in November." And again, "One plant situated in a great fruit and vegetable packing state and working on a seasonal basis, usually began work with a full force of 1,200 men, women and children, working sixty hours per week for several months. At the end of August or perhaps at the end of September, the force was suddenly reduced to as few as 100 employees." And yet, again, "A manufacturer of household specialties made 1,500 articles, which though staples, showed surprising seasonal variations in

demand. The total sales of the firm for the four quarters of the year were approximately 20,000 lb., 8,000 lb., 10,000 lb. and 30,000 lb. respectively."

Coal gets its appropriate space in this volume and is well treated, though we would question if it is safe to say that, "Fortunately it is now known that coal can be stored safely and economically," even though the writer adds "types known to be particularly liable to spontaneous

combustion should not be selected." He declares that "communities should aid the smaller consumers by providing municipal storage facilities." This seems to be a matter for private enterprise. It must, however, add greatly to the cost of the coal either by reason of high land rents if stored conveniently, or by reason of high truckage costs if stored where land is cheap.

"One trouble of this [bituminous] trade," says Mr. Feldman, "is the failure of bituminous operators to get together on their industrial problems." He overlooks the obvious fact that the law forbids such getting together and not wholly without reason.

Viewpoints of Our Readers

Water Gage or Anemometer to Show Entry Falls?

In the issue of *Coal Age* dated Oct. 8, covering the meeting of the Southern Mining Co.'s engineers at Williamsburg, Ky., a brief paragraph, referring to a paper which I read before them, states that "He [C. H. Trik] explained the fallacy of depending on the water-gage reading at the fan to indicate the condition of the airways. The anemometer is the only instrument which tells the true story."

This is only half of what I said, and it makes it appear that I recommended the disregarding of water-gage readings in favor of the use of the anemometer as an index of the condition of the mine. This was not my intention, for, indeed, the water gage is the most important instrument the mine ventilation engineer has in his determination of all ventilation characteristics of a mine.

EXPLAINS FULL MEANING

What I hoped to make clear was that it was useless to depend on a water-gage reading taken at the fan to tell whether there had been a fall of top in the air courses during the night. I explained that a modern fan running at a constant speed produces a constant depression and, therefore, providing the ventilating unit was not working above its normal capacity, any change in the air-course such as a fall in top, would not be indicated on a water gage. It was at this point that I said the

proper instrument to use to obtain such information would be the anemometer rather than the water gage.

The mine foreman is usually well conversant with the volumes flowing through his mine and any falls in the aircourses would, of course, tend to reduce the sectional area, and naturally, with the fan running at a constant speed, reduce the volume being handled. For this determination the anemometer is the instrument to use.

C. H. TRIK,
Ventilation Department
Jeffrey Manufacturing Co.,
Columbus, Ohio.

Washington Has Deeper Mine

On page 531 of the October issue of *Coal Age*, I note a statement to the effect that the Auchincloss No. 1 shaft of the Glen Alden Coal Co. near Nanticoke, Luzerne County, Pa., is the deepest coal mine in America.

I believe the record for the deepest coal mine in the United States goes to the famous Black Diamond Mine at Black Diamond, Wash., 30 miles southeast of Seattle. This mine has a depth below the surface of 2,049.34 ft. and below sea level 1,491.34 ft. You can see from these figures that it is under a cover 351.94 ft. greater and is 538.34 ft. deeper below sea level than the anthracite mine to which you refer.

GEO. WATKIN EVANS,
Consulting Engineer.
Seattle, Wash.



News Of the Industry



Hard-Coal Peace Plans Plentiful; Union Leaders Refuse to Consider Anything but Pinchot's Proposals

Prospects of an early resumption of mining in the hard coal region appeared nearly as remote as ever at the opening of Christmas week. The only thread of hope, and that admittedly a slender one, was the campaign undertaken by mayors and burgesses of the anthracite communities to bring the operators and miners together again to resume negotiations. This campaign was started after the civic officials, summoned to Harrisburg on Dec. 16, had declined to be bound by the Pinchot "peace" plan in their efforts to persuade the scale committees to reopen discussion. The Harrisburg conference went on record in favor of any plan that would break the deadlock in the following resolution:

"That it is the sense of this meeting of the executives of the anthracite region that the operators and miners be invited to meet together in conference at the City Hall of Scranton one week from today or at such other time and place as may be more convenient, there to take up the negotiations at the point where they were broken off last August and with the understanding that either side shall be at liberty to bring up for discussion its own plan or plans, the Governor's plan or any other plan that may be offered."

The operators, meeting at Wilkes-Barre on Sunday, announced their acceptance of the invitation to meet the miners under the terms of that resolution, which, they pointed out, "indicates that no one plan is to be the subject of conferences, but that any plan may be presented for consideration. With this understanding we accept your invitation."

"If the miners likewise accept your invitation under the conditions stated in your resolution, then we are ready to meet at the call of the chairman, Alvan Markle, as provided in the resolution of the negotiating committees adopted at the time of adjournment at Atlantic City. This is the regular course of procedure in such cases. If the published report of Mr. Lewis' reply to your communication is correct that the Pinchot plan alone will be considered by the miners, it would, of course, preclude a conference."

At the time the operators' position was made public, no formal statement of the miners' stand had been made. It was strongly intimated, however,

that Mr. Lewis and his associates would insist that the Pinchot plan alone be the basis of negotiations.

The war of words over the causes for the failure to end the anthracite suspension grew increasingly violent during the past week. A five-point program to end the strike, suggested by seven Luzerne County members of the Pennsylvania House of Representatives and promptly indorsed by the operators, moved John L. Lewis, president of the United Mine Workers, to a fresh outburst of belligerency. He denounced the proposals as "simply the operators' plan wrapped up in a new package," charged the producers with a conspiracy to smash the union and declared that "the United Mine Workers is now organizing the defense of the anthracite mine workers in expectation of a continuance of the present struggle to the fall of 1926 or the spring of 1927."

W. W. Inglis, chairman of the operators' negotiating committee, retorted with an attack upon the figures used by Mr. Lewis in building up the "conspiracy" charge. Between 1902 and the time Mr. Lewis assumed control of the union, said Major Inglis, differences between the operators and the men had been settled by collective bargaining. "Since Mr. Lewis has been in charge, nothing has been accomplished by that process and we have had three strikes in less than four years."

Bituminous Leading Influence

"Mr. Lewis glibly talks about continuing the present struggle to the fall of 1926 or the spring of 1927. Once more he furnishes evidence of the interest of his organization in the bituminous field. The anthracite strike had its beginning in Mr. Lewis' effort to regain lost ground in the bituminous field. When he talks of continuing it to the expiration of the Jacksonville agreement, it is apparent that the dominating influence in the present controversy is still bituminous and not anthracite."

Governor Pinchot's activities came in for a scoring from two sources. The board of directors of the Chamber of Commerce of the United States, meeting in Washington, adopted a resolution stating that "examination of his proposal shows that it did not propose that all controversial issues should be

Why Worry About Strike? Heat Homes with Mine Gas

Capturing escaping mine gas and piping it into their homes in Kirby Park, Wilkes-Barre, Pa., Tom Phillips, supervisor of the parks in that city, and William Law, foreman at Kirby Park, have solved the fuel problem as far as they are concerned. The supply of gas has been led into the fire-boxes of hot air furnaces, where crushed bricks were placed and the gas ignited. The burning gas heats the broken brick to a white heat and the radiation is more than sufficient to heat the homes comfortably. There appears to be sufficient gas from this one source to heat fifty homes, and other householders in the vicinity of the park are talking of adopting the same plan. It sounds like a fairly tale, but the two park officials say "let those who doubt come and see." It is admitted that the supply is uncertain, however, inasmuch as mine gas frequently disappears rather suddenly.

arbitrated. On the other hand, the operators offered arbitration of all issues involved in the controversy. While it is not the purpose of the board to define any plan of arbitration, it is its judgment that any plan to be of lasting benefit to the industry and in the public interest should consider the merits of the controversy in all of its aspects."

The second attack upon the Pinchot program came from the operators in a lengthy statement made public on Dec. 18. Instead of taking the middle ground alleged, said the statement, the Governor's proposal "resolved every question in the miners' favor without investigation. The Governor criticizes the operators because they have refused 'to yield one jot or tittle of their original position.' The truth is that the operators have made certain assertions of fact which they believe to be true. If the assertions of the operators are untrue and do not afford the basis for a sound and fair settlement, that would be brought out in the kind of impartial arbitration for which the operators have been contending from the start."

"Neither the Governor's plan nor the calling of an extra session, nor condemnation of the course taken by the operators produces any coal. The operators have had a single aim throughout the entire controversy. That was to bring about production, avoid suspen-

Real Earnings of Contract Miners In Anthracite Fields—II

(LEHIGH COAL & NAVIGATION CO.)

Are contract miners in the anthracite fields underpaid?

John L. Lewis, international president of the United Mine Workers, insists that they are. He has repeatedly drawn upon the reports of the Coal Commission, with their misleading figures basing earnings upon the number of starts made, to support his assertion. In a statement published in the Sept. 15 issue of the *United Mine Workers' Journal*, Mr. Lewis declared that the average was \$1,700 per year, from which "there must be deducted over \$200" for supplies.

Check of actual payrolls, however, tells a far different story.

For example, in 1924, six breakers of the Lehigh Coal & Navigation Co. averaged 271 starts per breaker and employed 1,638 contract miners. But only 1,136 men, or 69.4 per cent, of the total worked regularly enough to appear on each of the 24 semi-monthly payrolls. There were 152 men who earned over \$3,500 net for their work. This group, averag-

ing \$3,809.78, made 274.8 starts, or an average of 3.8 days more than the average starts per breaker. The next highest compensated group averaged 268.4 starts, as compared with 271 for the breakers, and made \$3,448.53.

The average earnings by \$100 groups for the 1,136 contract miners were as follows:

Miners	Average Annual Earnings	Miners	Average Annual Earnings
152	\$3,809	80	\$2,451
39	3,448	70	2,353
46	3,347	57	2,246
40	3,241	53	2,152
38	3,150	33	2,056
68	3,051	22	1,953
80	2,949	17	1,849
90	2,850	9	1,749
82	2,748	1	1,630
82	2,650	3	1,562
74	2,547

The average per man for the entire group was \$2,830.54. Nearly 70 per cent (69.63) of the group averaged in excess of \$2,500 per annum. Less than 5 per cent received under \$2,000. The three men in the lowest rated group (\$1,562 per annum) worked only 225 days.

sions in the future, and, if possible, reduce prices to the consumer. Any plan that does not accomplish permanent peace is valueless.

"The only practical effect of the Governor's course is to prolong the strike, increase the public's inconvenience and add to the distress suffered by the mine workers and to the losses of the industry and to the whole anthracite region."

The Luzerne County legislators' plan so hotly dismissed as unworthy of attention by the miners provided:

(1) An immediate resumption of work under the terms of the expired contract for the period until Sept. 1, 1926.

(2) A negotiating committee to be composed of three representatives of the operators and three representatives of the mine workers to resume negotiations two months after the resumption of work, to consider any modifications of the expired contract that may be urged by either party.

(3) In the event that any matters in dispute are not disposed of by the negotiating committee within thirty days after the resumption of negotiations, such matters shall be referred to a board of settlement, to be composed of the members of the negotiating committee, who shall sit with the board of settlement but without vote, and five voting members to be appointed to represent the public interest either by, first, the President of the United States, or, as an alternative, by, second, the Chief Justice of the Supreme Court of Pennsylvania and the presiding Judge of the U. S. Circuit Court of Appeals of the Third Circuit. This board of settlement to have authority to start immediately an investigation of the economic and technical facts by which all questions of working conditions, wages, etc., may be settled. The board to be selected and organized within thirty days after any questions are referred to it, and to render its decision within three months.

(4) A new contract embodying the above principles, for a period of at least five years and preferably for ten years, to be formulated and signed to be made effective from September, 1925.

(5) Either party to have the right, not oftener than every twelve months, to call a conference of the negotiating committee to reconsider any element of the contract. Matters not disposed of within sixty days

at such conference to be referred to the board of settlement for final decision, such decision to be rendered within sixty days of such reference.

The Chamber of Commerce resolution was not the only Washington expression on the strike situation. On Dec. 17 Senator Copeland of New York asked the Senate to forego its holiday recess until something was done to relieve "suffering of the poor forced to go out each morning for a bucket of coal just as they do for a bottle of milk or a loaf of bread." On Dec. 19 Representative Black of New York attacked President Coolidge for failure to intervene. The President's policy was defended by Representative Treadway of Massachusetts, who urged consideration of coal regulatory bills he has introduced. One of these bills authorizes the President to operate the mines in emergencies and another measure would put the Coal Commission's recommendations on the statute books.

On Sunday night the American Federation of Labor made an appeal to union workers in other industries to come to the financial support of the striking miners. The strikers were pictured as victims in a struggle against "arrogant" operators for the rights of union labor. The burden of meeting the necessities of unemployed members and their families in both anthracite and bituminous fields, said the appeal, "is too great for one organization and the cry reaches beyond the United Mine Workers of America. Organized labor in America must hear that cry, and, hearing it, must respond to the needs of the men, women and children in the anthracite region who are suffering from hunger and who need our help."

Sue Arkansas Union on Basis Of Coronado Case

The Greenwood Coal Co., Mammoth Vein Colliery Co., Backbone Coal Co., Semi-Anthracite Coal Co. and Blue Hills Coal Co. filed suit in the U. S. Court at Fort Smith, Ark., Dec. 11, against District 21, United Mine Workers; its officers, executive board, individual members and locals in western Arkansas counties, alleging conspiracy to restrain commerce in coal and praying judgment for \$1,080,000 as triple damages under the Sherman Anti-Trust law.

The suit is based on the same contentions made in the suit of the Coronado Coal Co., now on trial for the third time in U. S. District Court.

Miners now on strike are charged with having caused employees of the companies to quit work by threatening them and by other methods and with advocating violence during union meetings in violation of an injunction order issued by the Sebastian County Chancery Court and with responsibility for the burning of the tipples of one mine.

The alleged combination also is charged with maintaining agents and representatives charged with the duty of preventing, if possible, the transportation of coal in interstate trade and commerce.

Free Reconsignment Allowed By Grand Trunk at Detroit

The following provision in Grand Trunk R.R. I.C.C. 2272, Supplement 2, became effective Dec. 2, 1925:

"No charge will be made for a single diversion or reconsignment of anthracite coal when reconsigned or diverted at Detroit, Milwaukee Junction or West Detroit, Mich., for deliveries within the Detroit switching district or when destined to points beyond the Detroit, Milwaukee Junction and West Detroit switching district when through rates from points of origin or rate basing point to final destination apply via Detroit, Mich.

"No charge will be made for a single diversion or reconsignment of anthracite coal when reconsigned or diverted at Port Huron, Mich., for deliveries within the Port Huron (Mich.) switching district, or when destined to points beyond the Port Huron switching district when through rates from points of origin or rate basing point to final destination apply via Port Huron."

Orient No. 2 Produces 12,823 Tons in Day

Orient No. 2, the Chicago, Wilmington & Franklin Coal Co.'s big mine at West Frankfort, Ill., established a new world's record on Dec. 17 by producing 12,823 tons of coal. This was the third time within three months that this operation broke the world's record for a single day's production.

This immense output required 248 railroad cars. The mine's previous record was 11,325 tons. Eleven hundred miners are employed.

Coolidge Luck Seen in Diversion Of Anthracite Strike to Intrastate Issue by Pinchot Call to Legislature

By Paul Wooton

Washington Correspondent of *Coal Age*

Whether or not the Governor of Pennsylvania will succeed in curbing his pet obsession, the "anthracite monopoly," at the special session of the Legislature which he has called, remains to be seen, but he has done one thing: he has created a diversion which removes the anthracite situation from national politics. It now has become an intrastate issue. So long as the executive of a sovereign state which includes all of the anthracite mines is acting the federal administration will have less reason than ever to intervene.

Governor Pinchot has the police power and all of the mines are in his bailiwick. He has drawn to himself the spotlight of public attention and has furnished the President with a second and a better reason than the presence of Congress for declining to interfere. Some see in this another manifestation of Coolidge luck.

Even Congress is less likely to act until at least the Pennsylvania Legislature shall have had an opportunity to meet the situation. As far as constitutional powers to control either miners or operators are concerned, the state Legislature has two trumps for each one held by Congress. Speculation in Washington turns on what the Governor can accomplish through the medium of the Legislature.

See Tough Job for Pinchot

Pennsylvania politics is little understood in Washington, so the comment does not get much beyond questions. Doubt is expressed as to the ability of the Governor to force the Legislature to take any action against the anthracite operators. Pennsylvania is a conservative state. Its legislators have a better grasp on sound business principles than is the case in many other states. In the national Congress the anthracite industry might have few champions, but in the Pennsylvania Legislature there is no dearth of capable members who will see that the position of the producers is presented effectively.

Doubt is expressed, however, of the willingness of the Legislature to punish the miners. The often repeated suggestion that the contract miners' certificate law be repealed seems to lose sight of the fact that this law was passed in the days of Boss Quay, before the union entered the anthracite region. Enough is known in Washington of the situation in Pennsylvania to realize that the chance of erasing that law from the statute books is small.

Whatever the Legislature may do the feeling in Washington is that Governor Pinchot and John L. Lewis, between them, have so muddled the waters as

to confuse the public further. The call of the Legislature tends to strengthen the impression that the miners already have spread abroad that there is a desire to avoid the issue rather than take action calculated to terminate the strike promptly.

The Board of Directors of the Chamber of Commerce of the United States was prompted by the action of the Pennsylvania Governor to adopt a formal resolution in the following language:

"Arbitration as a means of adjusting the present strike in the anthracite field has taken on added importance because of the proposal of Governor Pinchot.

"An examination of his proposal shows that it did not propose that all controversial issues should be arbitrated. On the other hand, the operators offered arbitration of all issues involved in the controversy.

"While it is not the purpose of the Board to define any plan of arbitration, it is its judgment that any plan, to be of lasting benefit to the industry and in the public interest, should consider the merits of the controversy in all of its aspects."

None will be surprised if there is administration support for fact-finding legislation. This support will be predicated on a belief that the coal industry could be made more helpful with a complete statistical service. It is thoroughly recognized that the industry will oppose such legislation. The feeling is, however, that only government figures would be accepted by the public. Even were the industry itself to furnish the figures that would be thoroughly satisfactory to the government, the opinion is expressed that the public would not have confidence in the statistical returns from that source.

Adequate Statistics Needed

In that connection the opinion is expressed by those holding these views that had the government been furnishing an adequate statistical service on coal, regulation of the industry could have been withstood more successfully at this session. Even now the feeling in these quarters is that a real coal statistical service by the government would constitute great protection to the industry from more savage forms of legislation.

Despite the inherent tendency of Anglo-Saxon peoples to oppose monopoly, the opinion is expressed that public sentiment would not be averse to the reduction of producing units in the coal industry from eight or nine thousand to five or six hundred. The feeling is that with this latter number of units, ample competition would be insured and the industry would be stabilized greatly.

Strike Effects Stressed in President's Message

Referring to strikes, President Coolidge in his message to Congress, on Dec. 8, said:

"A strike in modern industry has many of the aspects of war in the modern world. It injures labor and it injures capital. If the industry involved is a basic one, it reduces the necessary economic surplus and, increasing the cost of living, it injures the economic welfare and general comfort of the whole people. It also involves a deeper cost. It tends to embitter and divide the community into warring classes and thus weakens the unity and power of our national life. Labor can make no permanent gains at the cost of the general welfare."

C. Bascom Slemph Heads New \$9,750,000 Merger Of 14 Coal Companies

Richmond, Va., Dec. 19.—A charter was granted today to the Wakenva Coal Co., which represents a consolidation of fourteen coal mining companies. The production of the fourteen mines of these companies, located in West Virginia, Kentucky and Virginia (from the names of which states it will be observed that the name of the new company is derived), is 1,500,000 tons annually. It is expected that the output will be increased to 2,500,000 tons, which will make the company one of the most important operating units in the Southern fields. The total capitalization is \$9,750,000. The financing was arranged through Robert Garrett & Sons, Baltimore.

C. Bascom Slemph, who, upon his retirement as secretary to President Coolidge, resumed the practice of law with offices in Washington, D. C., is the Chairman of the Board of Directors of the new company; S. R. Jennings, Johnson City, Tenn., who headed a number of the constituent companies, is president of the new organization, and A. S. Higginbotham, Tazewell, Va., vice-president. The directors include C. B. Slemph, S. R. Jennings, Jas. W. Gerow, A. K. Morison, E. R. Boyd, A. S. Higginbotham, Ferdinand Powell and other prominent business men.

The markets will be in the South, along the Atlantic Seaboard and in the Northwest. It is stated that the company will sell high-grade domestic and steam coals.

The companies included in the merger are the Beaver Creek Coal Co., Camp Branch Coal Corp., Floyd-Elkhorn Consolidated Collieries, Graden Coal Co., Hazard-Blue Grass Coal Corp., Hill Creek Coal Co., Kennedy Coal Corp., Kroll-Litz Coal Co., Lewis Creek-Banner Co., Nora Coal Corp., Sandy Ridge Coal Co., Upper Banner Coal Corp., Virginia-Banner Coal Corp. and Walkers Branch Mining Co.

Labor Now Minor Factor In W. Va. Strike Zone; Selling Problem Presses

The labor situation does not seem to be an important factor in northern West Virginia at present as far as coal production goes. The non-union mines seem to be getting out all the coal they want and a great deal more than the present flabby market will absorb. There were rumors afloat in the region this week to the effect that the non-union operators will make another reduction in wages after Jan. 1. As no intimation of such a move has been made public thus far, it is thought to be union propaganda.

Some operators believe that an effort should be made to effect a number of group mergers, which would take away the stigma of monopolistic features and at the same time pave the way toward stabilization. Central sales agencies also are suggested as a means of solving many of the unwholesome business problems of the industry. While the operators unquestionably have won the laurels from the United Mine Workers in their labor struggle it has been a costly fight and with the present ragged market and no hopes of curtailing production they are beginning to find that not a great deal has been gained in dollars and cents. Many companies have borrowed heavily on their properties, and officials say they have little to show for their struggle. If the present unsettled market continues some of the companies may be forced into bankruptcy.

With the approach of the Christmas season production in the region is easing up; a number of mines in the field, it is said, will close down over the holiday season.

B. & O. Embargo Placed

Due to the heavy bituminous coal shipments in the East the B. & O. placed an embargo on consignments to Reading, Pa., at the request of the Reading Ry. The mines had a full run of coal cars last week, after car shortage was experienced on the Monongah Division, B. & O., during the last three days of the previous week. Pennsylvania equipment on the Monongahela was getting scarcer toward the end of the week.

Two hundred and twenty-four non-union coal mines are operating daily in the 12½ counties of northern West Virginia, while the average number of union mines at work in the region is 14. After a lull of some time the first union mine on the Monongah Division, B. & O., resumed operation last week. This is the Annabelle Mine of the Four State Coal Co., near Worthington.

In the first half of last week the mines of the 12½ counties loaded 5,688 cars of coal, compared to 6,051 cars in the corresponding period of the previous week. Union mines loaded 784 cars of coal in the first four days of last week compared to 862 cars in a similar period of the previous week.

The Mine Workers continue their mass meetings in the field, although they are not as numerous as some



Major Clarence T. Starr

He is coal specialist for the Chamber of Commerce of the United States and has been elected chairman of the Washington section of the American Institute of Mining & Metallurgical Engineers. M. Van Siclen, assistant chief mining engineer for the Bureau of Mines, was elected vice-chairman. H. I. Smith, chief of Minerals Leasing Division of the U. S. Geological Survey, was chosen for the combined office of secretary and treasurer. J. D. Nevius, of the Mines Valuation section of the Bureau of Internal Revenue, and W. H. Wagner, a consulting mining engineer, were elected to form, with the foregoing, an executive committee.

weeks ago, when the weather was milder. Officials say 600 people attended a meeting at Bear Mountain Dec. 13 and that meetings addressed by Bittner in Philippi and Rosemont Dec. 15 were well attended, as was a meeting in Flemington Dec. 16. A large mass meeting was held in Scott's Run Dec. 13, also. Group meetings of local unions were held last week in Monongah and Farmington and the regular session of the policy committee was held in Monongah.

Robert Bostic, a union miner, was shot at Bingamon, a mining town of the Bingamon Gas Coal Co., Dec. 13, by Marion B. Shobe, a mine guard, it is alleged, and Bostic is a patient in St. Mary's Hospital in Clarksburg suffering from two wounds in the back.

Modify Union Wage Scale In Cambridge Field

After a conference of several weeks between leading operators in the Cambridge (Ohio) field and representatives of the United Mine Workers, an agreement was reached last week to modify local conditions in the Jacksonville scale in such a way as to reduce production costs. The miners waived their claim for payment for removing slate, and changes were made in the rules governing the width of entries to be driven. All the operators signed the new agreement except the National Coal Co. and the Cambridge Collieries Co., the two largest operators in the field. It is believed that some of the mines will resume work on the modified scale.

Dering Mine Reopens; Will Comply with Indiana Law

Work was resumed Dec. 10 at the Dering mine No. 6, in the Clinton field, Indiana, following dissolution of an injunction granted by Judge Howard Maxwell of the Parke County Circuit Court, restraining the state mine inspector from interference with the single-entry system of mining practiced in the mine. Points of controversy in the case, which attracted wide attention in Indiana mining circles because of the principles involved, were settled by an arbitration board. Miners refused to return to work, however, until the injunction was dissolved. This was accomplished through application to the court by attorneys representing the J. K. Dering Coal Co., owners of the mine, and the miners.

Previous to issuance of the injunction the company had used machines in working single entries, obtaining ventilation through an auxiliary fan that forced air to the working face through a canvas tube. No "breakthroughs," as provided for in the state mining law, were employed. Following protests by the miners, an inspection was made by the state mine inspector. The Dering company countered this move by obtaining the injunction. The miners walked out.

With the reopening of the mine a double-entry system with "break-throughs" for ventilation will be used.

High-Volatile Supplemental Rate Order Extended

Through the activities of A. A. R. Yarborough, traffic manager of the Kanawha Operators Association, the original supplemental order of the Interstate Commerce Commission granting joint through rates on high-volatile prepared coal from southern West Virginia has been amended to include mines along the New York Central (Kanawha & Michigan) on the north side of the Kanawha River. The order now extends to all mines on the Winifrede R.R., Kanawha Central R.R. and all mines in the Kanawha district at points on the New York Central lines, from Plymouth to Gauley bridge, including points on the Smithers Creek branch, and all rates on the prescribed basis will be maintained as follows: New York Central lines to all destinations embraced in routes 1 to 41 as prescribed in original supplemental order. The rates upon the basis prescribed in the supplemental order issued are to become effective on or before Jan. 4, 1926, upon not less than five days' notice and in every other respect shall accord with orders laid down in supplemental orders affecting other bases in the Kanawha field.

Coal operators received word in Fairmont, W. Va., Dec. 16 that the Interstate Commerce Commission has granted permission to the Baltimore & Ohio R.R., to change the tariff so as to eliminate the \$2.70 charge on "order-notify" shipments, which was protested by the Monongahela Valley Association at its meeting in Fairmont Dec. 15.

Machinery Set in Motion To Block Intrusion of Government in Business

Steps to curtail the intrusion by government in private business were taken at a two-day conference of about two hundred representatives of business, trade and other organizations concerned in the growing tendency of municipal, county, state and federal governments to engage in business activities held to be the proper province of the citizen, which concluded its sessions at Washington on Dec. 11.

It was the definite expression of the conference that no new organization was necessary, but that it was advisable to create a conference committee to aid the activities of the associations interested in this particular subject.

The declared purpose of the conference was:

"(A) To disseminate among the people correct information as to the extent, cost and results of government enterprises.

"(B) To urge that in all government operations there be established a recognized and adequate system of cost accounting; and that all existing prohibitions against rewarding labor on merit and efficiency be abandoned.

"(C) To inform the people that government in business means the establishment of a socialistic state, and the ultimate destruction of all individual opportunity.

"(D) To oppose every existing or proposed intrusion by government into the proper field of private enterprise."

Hoover Foresees Difficulty

Getting the government out of business is more difficult than it appears on the surface, Secretary Hoover pointed out in an address at the conference.

"It seems to me that you will have a good deal of difficulty establishing any very precise lines of principles on the question of the government in business," he said. "And one side light on it is that the demands that the government shall get into business to large degree come from the business world itself. The desire to regulate the other fellow seems inherent in the human heart. Therefore an education of the business world will be useful as a start on the question.

"Nor is it possible to dismiss the question with just the summary slogan of 'Get the Government out of Business.'"

"To start with, it is obviously the proper function of all government to prevent fraud and unfair practice in business. The ten commandments need some supplement to meet new inventions. The steady growth of business standards and business ethics has been a solid contribution of progress in this direction.

"Furthermore, uncontrolled monopolies have been anathema to the sense of the race ever since Cromwell, and we all look to the government to take care of the question. Some years ago we strengthened the anti-monopoly laws by the Sherman Act, under which it was proposed to maintain competition in all directions. The people gradually

Not Liable for Injury to Child Hired "on Quiet"

The Kentucky Court of Appeals on Dec. 11 rendered a decision holding that under the Kentucky child labor law an employer cannot be held liable for damages when a child is injured who has been employed without the knowledge or consent of the employer. In this case a 13-year old boy who had been killed in a fall from a company truck had not been employed by the company but by the company's truck driver, who was getting the boy to help him. Counsel for the defense successfully maintained that contributory negligence of the boy's parents in permitting his employment was a proper defense to the action against the company.

came to realize that the public utilities were a national monopoly in the local sense and that maintained competition among them would entail enormous duplication of capital and service and consequent cost to the consumer. With good sense they have set up monopoly but subject to regulation. So we have the government in the business of regulating the profits of the natural monopolies and the government in the business of and insisting upon competition among the other industries and trades. It may not be done perfectly, but in any event, it is not going to be abolished. It ought to be made better.

"Again there are numbers of public-works, river and harbor road and other improvements which by common consent must be built on at government expense.

Unnecessary Duplication Costly

"There are a vast amount of welfare services such as educational and statistical services, informational services, promotion work which have been established in the government by common consent, all of which mean much government in business. In all this governmental machinery we need much reorganization not only that it shall work more efficiently and economically but that its unnecessary duplications shall be taken off of the back of the people.

"But what I feel that most people refer to when they talk of the government in business is that they do not wish the federal government to engage itself in the buying of commodities, or services for resale, and they do want the government to procure services and commodities for its own use by competitive bidding from the business world.

"I believe there are some points where the federal government could reduce its business activities. I am sure the whole federal government and Congress would welcome a sane study of the whole problem. Government officials are overburdened with labor and they welcome the co-operation and development ideas and methods, and eternal vigilance is the price of liberty in these matters."

Act to Set in Motion Hoover Anti-Waste Plan In Marketing Methods

Acting in accordance with a suggestion from Secretary of Commerce Hoover, the National Distribution Conference, meeting at Washington under the auspices of the United States Chamber of Commerce, on Dec. 16, took steps toward setting up machinery by which business may co-operate for the purpose of self-government and the tracing and elimination of wastes in marketing. The conference began Dec. 15 and lasted two days.

In the early sessions of the day committee reports were submitted describing marketing conditions as they now exist. The reports placed the blame for marketing wastes with the producer and the consumer, as well as with the distributor. The conference subsequently decided that "present methods of distribution have been developed by economic forces and fundamentally are sound."

The conference recommended as a first step toward the elimination of trade abuses and destructive trade practices that the Chamber of Commerce designate a joint trade relations committee, representing manufacturers, wholesalers, retailers and the public, to act as a clearing house for complaints.

Further steps also were proposed for the joint collection of statistics and business figures and the conduct of economic research in the interest of business and the public at large.

Secretary Hoover in a brief address called upon the conference to establish an organization of business men to co-operate with the Department of Commerce in its campaign for the elimination of waste.

"We would be grateful," he said, "if there would come out of this conference some kind of an organization for the promotion and the better co-ordination of research; that some sort of definite, organized expression and impulse might be given to the building up of the statistical and research activities throughout the country. And I make that general expression because I believe that research, through the business world itself, and statistics so far as they may be competently collected, are in the hands of better agencies than the government."

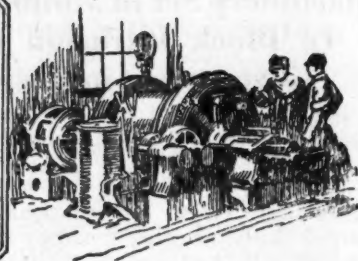
Felix H. Levy, of New York, and other trade association representatives urged that the conference demand the amendment of the Sherman Act to enable business concerns to co-operate in the achievement of economic reforms and that the Senate Interstate Commerce Committee be requested to grant a hearing for the discussion of the question.

Other members of the conference asserted that the anti-trust laws were hampering business but that it would be inopportune at this time to urge their amendment or repeal.

"No little part of the wastes resulting in inflation of present prices the conference held to be attributable to unreasonable demands by consumers for unnecessary distribution services."



Practical Pointers For Electrical And Mechanical Men



Substitute Wheel Press Serves Purpose And Saves Expensive Investment

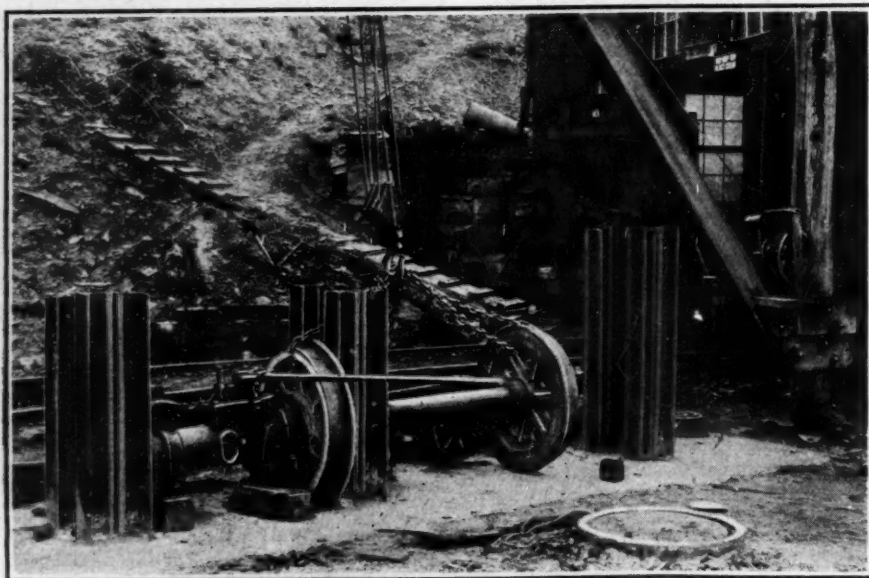
If a mine repair shop were equipped with every type of machine which occasion demands it would appear that the company was in the repair business instead of engaged in coal mining. The point to which it is economical to equip a repair shop depends upon the volume of work to be done and upon the proximity of a fully-equipped general shop rather than upon a sole consideration of the varieties and volume of the work it is called upon to perform.

A wheel press is one machine which if installed in many shops would be used only at infrequent intervals. This being the case at the shop of the Blue Diamond Coal Co., of Blue Diamond, Ky., Harry Kivett, chief electrician, was reluctant in advocating that the company invest in an expensive wheel press. Nevertheless, instances arose when a press would be of great advantage, so as a compromise he built the device illustrated in the accompanying photo-

graph which admirably serves the purpose for which it was intended and does the work it is called upon to perform, although more slowly than would a regular press built specially for this work.

This consists of a number of pieces of 80-lb. rail set in a large block of concrete. A 75-ton geared jack of the portable type does the pressing and the rails act as backstops. A jib crane conveniently located facilitates the handling of heavy material to and from this improvised press.

The twelve pieces of rail are set in groups of four, with a 6-in. space between pairs. This space provides for free movement of the shaft or axle being pressed. The block of concrete is 5 ft. thick and the rails extend 3 ft. above the top. So far all pressing jobs which have come up at the Blue Diamond shop have been handled successfully by means of the 75-ton jack and this backstop arrangement.

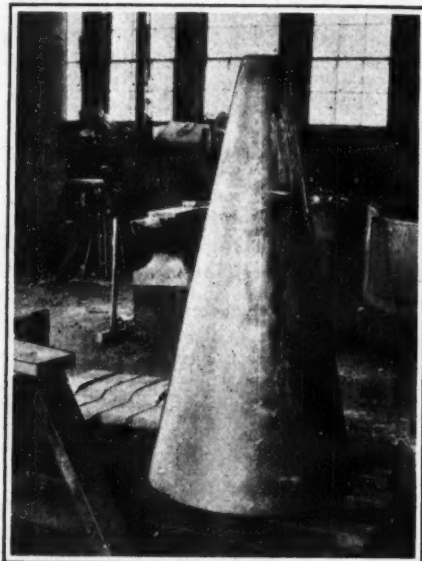


Using a 75-Ton Jack for Pressing Off a Wheel

Each of the backstops consists of four 80-lb. rails set 5-ft. deep in a block of concrete. A crane facilitates the placing of material in the proper position for pressing. The arrangement, while admittedly not as good as a wheel press, does well for a shop where the volume of work hardly justifies the purchase of a standard machine.

Cone-Shaped Mandrel Assists Mine Blacksmith

"Shrink a band around it," is often the prescription handed to the mine blacksmith when some me-

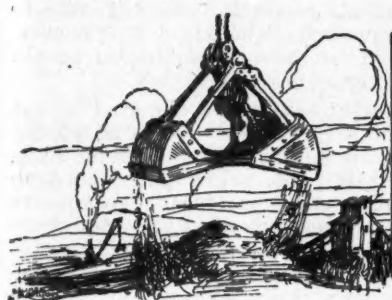


Handy for the Blacksmith

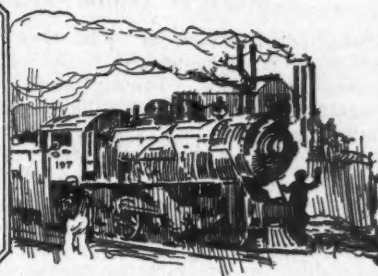
This cast-iron mandrel, 50 in. high, 5½ in. in diameter at the top, and 25 in. across at the bottom, is used for shaping rings, bands, and other curved forgings. Its size permits a great variety of work to be formed by its aid.

chanical part is brought to him for repair. The shaping of the necessary band to a true circle is not an easy matter unless an old shaft, a piece of pipe or the like of right size can be found for use as a mandrel.

An old device, but one which nowadays is found in comparatively few mine blacksmith shops, is that recently added to the shop equipment of the Fordson Coal Co., at Stone, Ky. This is the cone-shaped mandrel shown in the accompanying illustration. It is made of cast iron 50 in. high, 5½ in. in diameter at the top, and 25 in. in diameter at the bottom. The top is solid but the bottom is cored out cone-shaped in order to reduce the weight. The range of sizes of bands or rings accommodated by this mandrel includes all of those for which there is a common call in mine repair work.



Production And the Market



Seasonal Lull Marks Bituminous Coal Market; Coke Takes Turn for Better

Year-end readjustment in the bituminous coal market is responsible to a great extent for conditions that have caused the trade to be in a frame of mind that is not exactly exultant. That is an old story, of course, in a business that has its full share of hard-boiled factors. This is not to say that it lacks optimists, for as a matter of fact it is the latter class who allow their cheerful expectations to blind their judgment, and when their hopes and predictions fail of realization—as many have since the hard-coal controversy first appeared on the horizon—due in large measure to overplaying hunches and the reappearance of the evils that no business can escape, they are grieved to hear aspersions cast at the industry.

It is gratifying to note that during the present difficulty the coal business has been freer than usual from practices of a questionable character. Like the cut-up who rocks the boat, the producer who is willing to "take a chance" and ship on consignment always is with us, and he eventually meets the usual fate, but there always is another to take his place. The better element in the trade—those with its best interests at heart—are sticking to ethical methods, realizing that such fundamentals as the survival of the fittest are still doing business at the old stand.

Business Up to Seasonal Average

All things considered, the trade may be said to be pursuing a normal course. If business is not up to expectations—and it never is, in the estimation of some—that perhaps is because too much was expected. There is good reason to believe, however, that the outlook is better, for with the completion of inventories and the passing of the engrossing interests of holiday

time there is bound to be a let-up in the marking-time policy now more or less prevalent, consumption continues apace and the end of the anthracite strike is not yet in sight. Curtailment of production by observance of the holidays at the mines also will tend toward a healthier condition in the market.

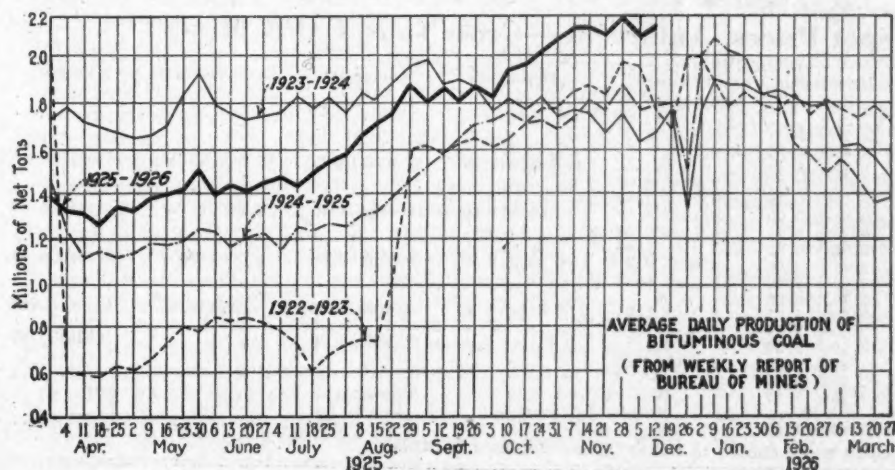
Governor Pinchot's efforts at peace in the hard-coal field having led nowhere in particular—save, possibly, deeper into hot water—resumption of mining seems to be as far off as ever. The special session of the Legislature called for Jan. 13 is likely to be productive of prolonged and acrimonious debate before accomplishing much in the way of results. Perhaps for that reason the demand for anthracite substitutes has improved, especially for coke, the price of which has taken a turn for the better.

Production Nears 13,000,000 Tons

Bituminous coal production during the week ended Dec. 12 is estimated by the Bureau of Mines at 12,898,000 net tons, an increase of 31,000 tons over the revised figures for the preceding week and a mark exceeded only four times, but not within the last five years. Anthracite output in the week ended Dec. 12 totaled 64,000 net tons, compared with 62,000 tons in the previous week. Total hard-coal output during the calendar year to Dec. 12 is 62,009,000 tons, or 27.8 per cent less than during the corresponding period of 1924.

Coal Age Index of spot prices of bituminous coal stood on Dec. 21 at 179, the corresponding price being \$2.17, compared with 182 and \$2.20 on Dec. 14.

Dumpings of coal at Hampton Roads during the week ended Dec. 17 totaled 457,157 net tons, as against 337,558 tons in the preceding week.



Estimates of Production

(Net Tons)

BITUMINOUS

	1924	1925
Nov. 28.....	9,885,000	11,599,000
Dec. 5 (a).....	10,831,000	12,867,000
Dec. 12 (b).....	10,873,000	12,898,000
Daily average.....	1,812,000	2,150,000
Cal. yr. to date.....(c)	454,854,000	493,676,000
Daily av. to date....	1,561,000	1,689,000

ANTHRACITE

Nov. 28.....	1,611,000	36,000
Dec. 5.....	1,814,000	62,000
Dec. 12.....	1,772,000	64,000
Cal. yr. to date.... (c)	85,944,000	62,009,000

BEEHIVE COKE

Dec. 5(a).....	174,000	298,000
Dec. 12 (b).....	192,000	291,000
Cal. yr. to date.....	(c) 9,057,000	9,946,000

(a) Revised since last report. (b) Subject to revision. (c) Minus two days' production to equalize number of days in the two years.

Midwest Trade Slumps Further

Lacking the aid of cold weather the Midwest market is in a disorganized condition, with coals offered at almost any price. Illinois and Indiana operators, when compared with producers in southeastern Kentucky, western Kentucky and West Virginia, however, have maintained their quotations unusually well. The main cause for the demoralization as usual, is too much coal produced and not enough demand.

Retail dealers will soon be in the market again, but it is obvious that as a rule they are not in the market now, being desirous of reducing stocks for inventory. They are quite willing to take a chance on coal being just as cheap around the first of the year as it is now, irrespective of labor and weather conditions.

Producers of high grade southern Illinois coal from Franklin, Saline and Williamson counties are sticking to their circular prices, although a few weak sisters have had to make sharp reductions to the big wholesalers in order to clear their tracks sufficiently to enable them to keep up production for steam contracts. Coal from non-union fields in the East and in western Kentucky continues to flood the market, a good many hundred cars coming into Chicago on consignment now. Pocahontas lump coal of fairly good quality has been sold in distress in Chicago as low as \$2.75. Pocahontas and other coal of recognized quality can be bought at \$3.

The available market supply of steam coals continues to dwindle day by day, but apparently enough of it is coming in to take care of industrial demands, as purchasing agents show no interest in acquiring additional supplies.

The weather is not exactly seasonable and coal is not moving as it should in southern Illinois. Lump is moving rapidly, but there is a slowing up in egg and the other sizes. Domestic dealers report their yards pretty well loaded up and such coal as is moving is under pressure. Shaft mines are easing up in steam this week whereas last week there was brisk buying. A falling off in railroad tonnage also is reported. The strip mines continue to make good working time and apparently find a ready market. There have been no changes in prices and working time ranges from three to five days a week. There is no car shortage and the railroads show faster movement.

In the Duquoin and Jackson County field there is little change. The mines are getting four and five days a week and are having trouble moving all sizes. In the Mt. Olive field conditions are slow; railroad tonnage has eased off and domestic is fairly good, while steam seems to be holding its own. In the Standard field there has been an easing up and coal is selling at just about cost, with "no bills" at all mines and hard work to move all sizes. Railroad tonnage is slow. The mines are getting from two to four days a week. Prices are unchanged.

At St. Louis the weather is not the kind that calls for

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern		Market Quoted	Dec. 22, 1924	Dec. 7, 1925	Dec. 14, 1925	Dec. 21, 1925†
Smokeless lump.....	Columbus....	\$3.85	\$5.25	\$4.25	\$3.25@ \$3.75	
Smokeless mine run.....	Columbus....	1.90	3.10	2.85	2.65@ 2.90	
Smokeless screenings.....	Columbus....	1.10	2.60	2.60	2.50@ 2.75	
Smokeless lump.....	Chicago....	3.75	4.50	3.60	2.75@ 3.50	
Smokeless mine run.....	Chicago....	1.85	2.35	2.35	2.00@ 2.35	
Smokeless lump.....	Cincinnati....	3.75	5.10	4.25	3.00@ 4.25	
Smokeless mine run.....	Cincinnati....	1.85	2.35	2.35	2.25@ 2.50	
Smokeless screenings.....	Cincinnati....	1.20	1.90	1.85	1.75@ 2.00	
*Smokeless mine run.....	Boston....	4.10	5.30	5.00	4.90@ 5.15	
Clearfield mine run.....	Boston....	2.00	1.85	1.90	1.75@ 2.25	
Cambria mine run.....	Boston....	2.35	2.15	2.20	2.00@ 2.65	
Somerset mine run.....	Boston....	2.15	2.00	2.05	1.85@ 2.40	
Pool 1 (Navy Standard).....	New York....	2.80	2.95	2.95	2.75@ 3.15	
Pool 1 (Navy Standard).....	Philadelphia..	2.70	2.95	2.95	2.80@ 3.10	
Pool 1 (Navy Standard).....	Baltimore....	2.30	2.20	2.20	2.20@ 2.25	
Pool 9 (Super. Low Vol.).....	New York....	2.05	2.30	2.30	2.15@ 2.50	
Pool 9 (Super. Low Vol.).....	Philadelphia..	2.15	2.30	2.30	2.20@ 2.45	
Pool 9 (Super. Low Vol.).....	Baltimore....	1.70	2.00	2.00	2.00@ 2.05	
Pool 10 (H.Gr. Low Vol.).....	New York....	1.80	2.05	2.05	1.95@ 2.25	
Pool 10 (H.Gr. Low Vol.).....	Philadelphia..	1.75	2.05	2.05	2.00@ 2.15	
Pool 10 (H.Gr. Low Vol.).....	Baltimore....	1.55	1.90	1.90	1.90@ 1.95	
Pool 11 (Low Vol.).....	New York....	1.60	1.75	1.75	1.65@ 1.90	
Pool 11 (Low Vol.).....	Philadelphia..	1.45	1.90	1.90	1.85@ 2.00	
Pool 11 (Low Vol.).....	Baltimore....	1.45	1.65	1.65	1.60@ 1.70	
High-Volatile, Eastern		Market Quoted	Dec. 22, 1924	Dec. 7, 1925	Dec. 14, 1925	Dec. 21, 1925†
Pool 54-64 (Gas and St.).....	New York....	1.50	1.55	1.60	1.50@ 1.70	
Pool 54-64 (Gas and St.).....	Philadelphia..	1.50	1.60	1.60	1.55@ 1.70	
Pool 54-64 (Gas and St.).....	Baltimore....	1.45	1.65	1.65	1.65@ 1.70	
Pittsburgh ac'd gas.....	Pittsburgh....	2.40	2.85	2.85	2.60@ 2.75	
Pittsburgh gas mine run.....	Pittsburgh....	2.10	2.35	2.35	2.00@ 2.25	
Pittsburgh mine run (St.).....	Pittsburgh....	1.85	2.05	2.05	2.00@ 2.10	
Pittsburgh slack (Gas).....	Pittsburgh....	1.30	1.55	1.55	1.50@ 1.60	
Kanawha lump.....	Columbus....	2.30	2.85	2.60	2.00@ 2.60	
Kanawha mine run.....	Columbus....	1.55	1.70	1.70	1.55@ 1.85	
Kanawha screenings.....	Columbus....	.95	1.20	1.20	1.15@ 1.25	
W. Va. lump.....	Cincinnati....	2.15	2.60	2.75	2.50@ 3.00	
W. Va. gas mine run.....	Cincinnati....	1.50	1.65	1.55	1.60@ 1.75	
W. Va. steam mine run.....	Cincinnati....	1.40	1.50	1.50	1.50@ 1.65	
W. Va. screenings.....	Cincinnati....	.95	1.15	1.10	1.10@ 1.25	
Hocking lump.....	Columbus....	2.50	2.85	2.60	2.25@ 2.60	
Hocking mine run.....	Columbus....	1.60	1.80	1.80	1.75@ 2.00	
Hocking screenings.....	Columbus....	1.10	1.35	1.25	1.20@ 1.30	
Pitta. No. 8 lump.....	Cleveland....	2.40	2.35	2.35	1.95@ 2.75	
Pitta. No. 8 mine run.....	Cleveland....	1.85	1.85	1.85	1.80@ 1.90	
Pitta. No. 8 screenings.....	Cleveland....	1.50	1.55	1.45	1.40@ 1.50	
Midwest		Market Quoted	Dec. 22, 1924	Dec. 7, 1925	Dec. 14, 1925	Dec. 21, 1925†
Franklin, Ill. lump.....	Chicago....	\$3.25	\$3.50	\$3.50	\$3.25@ \$3.50	
Franklin, Ill. mine run.....	Chicago....	2.35	2.50	2.50	2.35@ 2.65	
Franklin, Ill. screenings.....	Chicago....	1.75	1.85	1.85	1.75@ 2.00	
Central, Ill. lump.....	Chicago....	2.85	3.00	3.00	2.75@ 3.00	
Central, Ill. mine run.....	Chicago....	2.20	2.30	2.30	2.25@ 2.35	
Central, Ill. screenings.....	Chicago....	1.75	1.40	1.40	1.35@ 1.50	
Ind. 4th Vein lump.....	Chicago....	3.10	3.10	3.10	2.75@ 3.25	
Ind. 4th Vein mine run.....	Chicago....	2.35	2.35	2.35	2.25@ 2.35	
Ind. 4th Vein screenings.....	Chicago....	1.70	1.85	1.85	1.75@ 2.00	
Ind. 5th Vein lump.....	Chicago....	2.75	2.50	2.50	2.35@ 2.65	
Ind. 5th Vein mine run.....	Chicago....	2.10	1.95	1.95	1.85@ 2.10	
Ind. 5th Vein screenings.....	Chicago....	1.55	1.40	1.40	1.35@ 1.50	
Mt. Olive lump.....	St. Louis....	3.00	2.85	2.85	2.75@ 3.00	
Mt. Olive mine run.....	St. Louis....	2.35	2.00	2.00	2.00	
Mt. Olive screenings.....	St. Louis....	1.10	1.75	1.75	1.75	
Standard lump.....	St. Louis....	2.75	2.40	2.40	2.35@ 2.50	
Standard mine run.....	St. Louis....	1.95	1.80	1.80	1.75@ 1.90	
Standard screenings.....	St. Louis....	1.05	.85	.85	.75@ 1.00	
West Ky. block.....	Louisville....	2.20	2.10	2.10	1.85@ 2.15	
West Ky. mine run.....	Louisville....	1.55	1.35	1.35	1.25@ 1.50	
West Ky. screenings.....	Louisville....	1.05	.85	.95	.80@ 1.10	
West Ky. block.....	Chicago....	2.35	2.05	2.05	1.75@ 2.25	
West Ky. mine run.....	Chicago....	1.50	1.25	1.25	1.15@ 1.35	
South and Southwest		Market Quoted	Dec. 22, 1924	Dec. 7, 1925	Dec. 14, 1925	Dec. 21, 1925†
Big Seam lump.....	Birmingham..	2.85	2.75	2.75	2.50@ 3.00	
Big Seam mine run.....	Birmingham..	1.70	2.10	2.10	2.00@ 2.25	
Big Seam (washed).....	Birmingham..	1.85	2.30	2.30	2.10@ 2.50	
S. E. Ky. block.....	Chicago....	2.50	3.25	3.25	2.75@ 3.60	
S. E. Ky. mine run.....	Chicago....	1.45	2.15	2.15	2.00@ 2.35	
S. E. Ky. block.....	Louisville....	2.60	3.25	3.25	2.75@ 3.25	
S. E. Ky. mine run.....	Louisville....	1.40	1.60	1.60	1.50@ 1.75	
S. E. Ky. screenings.....	Louisville....	.95	1.35	1.25	1.00@ 1.25	
S. E. Ky. block.....	Cincinnati....	2.35	3.25	2.85	2.75@ 3.00	
S. E. Ky. mine run.....	Cincinnati....	1.45	1.60	1.60	1.50@ 1.75	
S. E. Ky. screenings.....	Cincinnati....	.90	1.20	1.10	1.00@ 1.35	
Kansas lump.....	Kansas City..	4.75	5.00	5.00	5.00	
Kansas mine run.....	Kansas City..	3.00	3.25	3.10	3.00@ 3.25	
Kansas screenings.....	Kansas City..	2.30	2.30	2.30	2.25@ 2.35	

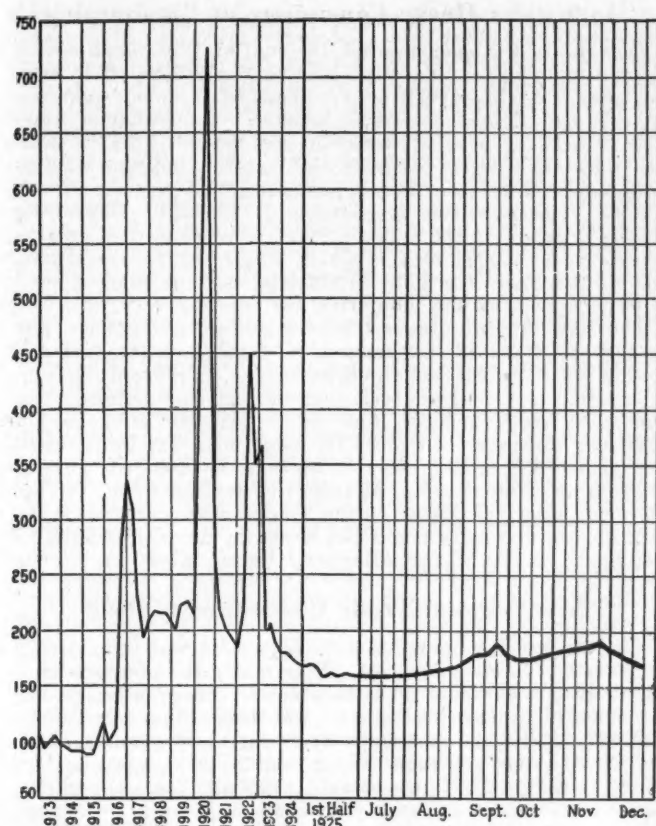
* Gross tons, f.o.b. vessel. Hampton Roads.

† Advances over previous week shown in heavy type; declines in italics.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

		Market Quoted	Freight Rates	Dec. 22, 1924		Dec. 14, 1925		Dec. 21, 1925†	
				Independent	Company	Independent	Company	Independent	Company
Broken.....	New York....	\$2.34			\$8.00@ \$9.25				
Broken.....	Philadelphia..	2.39			9.15				
Egg.....	New York....	2.34		\$8.25@ \$8.75	8.75@ 9.25				
Egg.....	Philadelphia..	2.39		9.45@ 9.75	8.80@ 9.25				
Egg.....	Chicago....	5.06		8.17@ 8.40	8.08	\$9.50@ \$10.00	\$8.03@ \$8.25	\$9.50@ \$10.00	\$8.03@ \$8.25
Stove.....	New York....	2.34		9.50@ 10.25	9.00@ 9.50				
Stove.....	Philadelphia..	2.39		10.10@ 10.75	9.15@ 9.50				
Stove.....	Chicago....	5.06		8.80@ 9.00	8.53@ 8.65	10.00@ 11.00	8.48@ 8.80	10.00@ 11.00	8.48@ 8.80
Chestnut.....	New York....	2.34		9.75@ 10.25	8.75@ 9.40				
Chestnut.....	Philadelphia..	2.39		10.00@ 10.75	9.25@ 9.40				
Chestnut.....	Chicago....	5.06		8.61@ 9.00	8.40@ 8.41	10.00@ 11.00	8.50@ 8.75	10.00@ 11.00	8.50@ 8.75
Pea.....	New York....	2.22		4.50@ 5.50	5.50@ 6.00				
Pea.....	Philadelphia..	2.14		5.75@ 6.00	6.00				
Pea.....	Chicago....	4.79		5.36@ 5.75	5.36@ 5.95	5.50@ 6.00	5.50@ 6.00	5.50@ 6.00	5.50@ 6.00
Buckwheat No. 1.....	New York....	2.22		2.00@ 2.25	3.00@ 3.15				
Buckwheat No. 1.....	Philadelphia..	2.14		2.50@ 3.00	3.00		2.50@ 3.00		2.50@ 3.00
Rice.....	New York....	2.22		1.85@ 2.00	2.00@ 2.25				
Rice.....	Philadelphia..	2.14		2.00@ 2.25	2.25				
Barley.....	New York....	2.22		1.25@ 1.50	1.50				
Barley.....	Philadelphia..	2.14		1.50	1.50				
Birdseye.....	New York....	2.22		1.40@ 1.60	1.60				

* Net tons, f.o.b. mines. † Advances over previous week shown in heavy type; declines in italics.



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1925			1924
Index	Dec. 21	Dec. 14	Dec. 7	Dec. 22
Weighted average price..	179	182	184	170
	\$2.17	\$2.20	\$2.22	\$2.06

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1924, as 100, after the manner adopted in the report on "Prices of Coal and Coke; 1913-1918," published by the Geological Survey and the War Industries Board.

any unexpected movement of coal and some retailers are just fairly busy moving small orders—of middle grades chiefly, although there has been a fairly good demand in the past week for high grade from both southern Illinois and western Kentucky. There has been a light call for smokeless, but anthracite is slow and coke is about holding its own. Country domestic has been quiet, dealers reporting large supplies on hand. Local wagonload steam shows improvement, carload is just about normal and country steam is slow. No change in prices.

Heavy Output Causes Weakness in Kentucky

Demand for coal in Kentucky continues fair, but production is so heavy and offerings so large that prices have weakened somewhat. The eastern Kentucky market is generally lower due in part to West Virginia mines quoting lower prices and moving large tonnage. In western Kentucky everything is weaker except screenings, which are being well maintained, at firmer prices, the market being kept cleaned up on pea and slack. Mine-run shows very little change in either field, prices being fairly firm, but a few lots are being offered at under the market.

General industrial demand is very good and the railroads are using a lot of engine, shop and general coal. Consumption is abnormally high for the season on steam coal, but mild weather and fair stocks in retailers' hands are making for just a little dullness in prepared, which probably would not appear dull except for the very heavy offerings.

Mines in eastern Kentucky which haven't operated in a long time have been running on the fall market, and car supply continues very good as a whole. Current loadings are very good. Western Kentucky is getting all the cars she needs to load, but needs orders worse than coal.

Prices for eastern Kentucky block are \$2.75@3.25, with

some specialty coals priced higher; lump, \$2.50@3; egg, \$2.25@2.50; nut, \$2@2.25; mine-run, \$1.50@1.75; screenings, \$1@1.25. West Kentucky block is \$1.85@2.15; lump, \$1.75@1.90; egg, \$1.60@1.85; nut, \$1.35@1.50; mine-run, \$1.25@1.50; screenings, 80c.@1.10.

Northwest Trade Fairly Active

Coal-dock operators at Duluth and Superior have found business good during the last ten days, though no special rush was noted in any direction. Industrial demand has not been so active lately, but iron mining companies on the Minnesota ranges are coming into the market for fair tonnages, mainly of Youghiogeny dock-run and screenings. Retailers also have been filling out stocks that had become run down and utilities and the railroads have been taking fair tonnages.

The number of cars loaded at the docks during December is expected to compare favorably with November, and, thanks to good service by the railroads, the trade has been handled without difficulty.

Fifteen cargoes of bituminous coal were unloaded at the docks during the last week of lake navigation, which wound up Dec. 15. Stocks of bituminous coal on commercial docks at Duluth and Superior totaled 5,136,000 tons on Dec. 1; anthracite, 156,000 tons. Demand for Pocahontas and other smokeless coals as substitutes for anthracite continues to be the market feature. Briquets also are beginning to sell more freely as hard-coal stocks approach the exhaustion stage, which will be about the middle of next month.

Apart from an easier situation in prepared sizes of Pocahontas, which are now offered at \$8.50, or 50c. off, the market is practically unchanged in either anthracite or bituminous coals.

Fuel conditions in Milwaukee have not changed in the last week. Demand fluctuates with temperature, but on the whole business is seasonable and satisfactory. In the absence of anthracite, consumers are using gas coke, process coke and low-volatile bituminous coals. Prices are steady.

Cold Snap Livens Southwest

Colder weather has brought a resumption of activity in the Southwestern field. Mines in Kansas continued to work through the long period of mild weather, but a slight surplus of lump had begun to accumulate when freezing temperature livened the market and operators foresaw an early return to conditions of three weeks ago, when they were two weeks behind with deliveries. The change in temperature, however, had little effect on conditions in Arkansas, where mines have been working only part time for several weeks. Buyers of Arkansas semi-anthracite stocked their bins early in the fall, and these will not begin to run low until after the first of the year.

In Colorado the prevailing warm weather has had the effect of curtailing orders and depressing output. The mines are operating approximately 86 per cent running time. While there has been no cancellation of orders, the trade is withholding future orders anticipating a change in the weather. All the mines have caught up with orders that came with the heavy demand in October and early November. There seems to be an oversupply of labor now due to the sugar beet campaign having ended. Transportation conditions are excellent. Prices show no appreciable change.

The Utah trade still hopes for seasonable weather to stimulate the movement of coal for heating purposes. Demand for steam coal is at least normal for the time of year. Railroads have been consuming more than usual on account of heavy crops, and other industries using steam coal are enjoying prosperity. The coal business is going to be better in the country districts this winter on account of the prosperity of the farmers. No grade of coal is regarded as a drug on the market now. Two months ago there was a surplus of slack, but now the supply is scarcely sufficient to meet the demand. Domestic lump and straight lump are still leading grades in the consumers' market, but more slack and pea coal is being used for heating purposes than heretofore, as a result of the installation of smoke consumers. Oil burners are getting a foothold, but their progress is by no means sensational. The news that oil has been struck in Utah is expected to hurt the coal business more or less. Prices are steady and the labor situation good.

Squeeze Continues at Cincinnati

Toploftiness in price, which has been a feature of the smokeless market at Cincinnati for three months or so, was pretty well dispelled during the past week. Distress lump has been hammered so hard by buyers and those who thought it to their advantage to "get out from in under" that sales are reported of odd lots at around \$3 and even a shade less. Egg appears to have been a little better off, the lowest it went being \$3.75. Contract holders say that they are still shipping the two at \$5@5.25, but there have been compromises in order to keep things rolling. The disposition is to hold mine-run as firm as possible. Screenings are weaker though the range has not been changed.

High volatile seems to have fared a little better. The raid on this price line-up has abated a little, even though the demand is not brisk. Hazard prices, taken as a criterion for southeastern Kentucky, hold at \$3 for block; only over-anxious sellers go below that. West Virginia shippers, with an immense tonnage to keep moving, whittle here and there with the prices down to \$2.50. Quality lump, however, has little bother in commanding \$2.75@3. Egg prices maintain their level of \$2@2.50 because of demand from Michigan points and Canada in the main. There is no change in the even tone which has marked mine-run for months. Screenings also have recovered their poise, this due more to seasonal uncertainty at the holiday period.

Only a spell of colder weather, it is believed, is needed to wipe out accumulations and the buying orders of the first of the month will tone up the market so that it should go forth with a bang.

Retail business is unchanged. River business is good, with the stage right and ports from Portsmouth to Louisville in grand shape to handle offerings over their elevators.

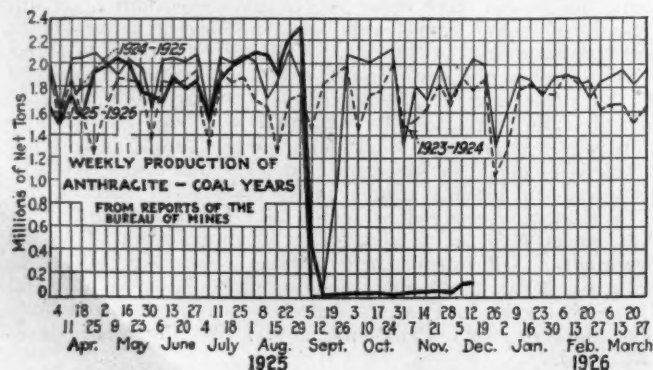
Columbus Dealers Go Bargain Hunting

Weakness in domestic sizes has marked the Columbus coal trade during the past week. Warm weather and the approach of the holiday season have been contributing causes. Dealers have heavy stocks and desire to clean up as much as possible before the first of the year. The domestic trade is a weather proposition now. Wholesalers, having difficulty in getting rid of lump and other prepared sizes, have been offering extreme low prices. Toward the latter part of the week a change for the better took place and dealers were induced to buy when bargains were offered. Retail prices have not been affected much by lower prices at the mines, but a change is close at hand.

The steam trade shows no improvement in any section. The larger users are pretty well supplied and are not inclined to buy for the future to any extent. Contracting for periods ranging from 60 to 90 days is rather brisk, but long-time contracts are not being entered into. There is some free coal on the market and a small amount of distress coal, which sells at low figures.

Under the influence of reduced demand, output in southern Ohio has declined to between 25 and 30 per cent of capacity. Pomeroy Bend, which is operating on the 1917 scale basis, has been pretty busy.

In eastern Ohio demand is unusually dull and retailers are loaded up. Spot prices are unchanged since last week. Production is declining, eastern Ohio output in the week ended Dec. 12 totaling 309,000 tons, or 44 per cent of capacity. This was a decrease from the preceding week of 30,000 tons but an increase over the corresponding week of last year of 36,000 tons. Some distress coal is in evidence and the price tendency is soft.



Industries Heavy Consumers at Pittsburgh

Demand in the open market for coal at Pittsburgh seems to be a trifle better this week, though the falling off in buying weeks ago is exerting a downward influence and the appearance of the market is weaker. Youghiogheny gas coal, which for several weeks it was quoted at \$2.75@3, has shown a trading range in the last few days of \$2.60@2.75; Westmoreland County gas is \$2.50, being sometimes shaded. Gas mine-run is quotable at \$2@2.25, depending on the urgency of the seller. Steam coal runs the same as formerly, \$1.40@1.50 for slack, \$2@2.10 for mine-run, and \$2.25@2.50 for 3-in. Industrial consumption of coal is quite heavy, as the industries are running very well.

The straight bituminous trade in Buffalo is quite as slow as ever, with prices very unsteady. Slack is scarce and gas coal is not plentiful, but the consumer is indifferent, having, it is said, more coal in stock than almost ever before. The smokeless trade has not done much yet, the price having advanced only from \$6 to \$6.75, while coke has gone up \$3 and probably will soon go still higher. Quotations: \$1.60@1.75 for Fairmont lump, \$1.40@1.50 for mine-run, \$1.25@1.40 for slack; \$2.25@2.50 for Youghiogheny gas lump, \$2@2.25 for Pittsburgh and No. 8 steam lump, \$1.30@1.60 for slack; \$1.75@2 for Allegheny Valley mine-run.

New England Trade Unseasonably Dull

The market for steam coal in New England, considering the season, is extremely dull. Apparently the domestic consumer who was relied upon to absorb a heavy tonnage has not risen to trade expectations. The fact is that bituminous output had already been built up to large proportions when the slump came, and there was a limit to what retail dealers would take on in advance of actual demand from the public. There are many now who say it was a mistake to encourage the use of prepared bituminous in this market. This is a territory that has been served by rail and water—a route economically cheaper—with low volatile run-of-mine, and the publicists who recommended lump, egg and nut from the smokeless districts failed to take into account both the expensive routing all-rail and the buoyancy of price that immediately results from insistent demand on the producer. Except in sparing quantities the industries, too, are not buying; most of the mills and utilities accumulated reserve stocks months and weeks ago, and are not likely to be interested in anything but deliveries on contract for a while.

At Hampton Roads the spot market is almost soft, and new low levels in price are anticipated. Owing to the pressure of increasing volume on the rails No. 1 navy standard Pocahontas and New River coals are being offered at less than \$5 per gross ton f.o.b. vessel, with intimations that lower figures would be acceptable for prompt loading. A few cargoes of splint coal are coming forward as a substitute for anthracite at an average price of \$3.50 per net ton at the mines. There would probably be a better opening by water than by rail for coal of this character, although much would depend upon how well it stands rehandling.

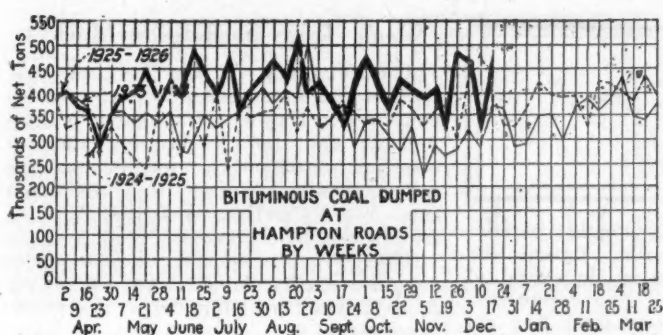
Cargoes of foreign coal continue to arrive in reasonably large volume. Less fancy Welsh anthracite is included than was the case a month ago; the desirable kinds and sizes were bid up to prices beyond the reach of ordinary retail distributors. The importation of Scotch and German coke, especially metallurgical coke, doubtless will be abandoned. Results have been unsatisfactory and there are dealers who have it on their hands and are unable to find sale for it. Patent fuel, such as ovoids, however, seem to be going fairly well and are offered at retail at around \$16 per net ton. Boston retail dealers still have Pennsylvania anthracite they sell for \$18 per net ton delivered.

On cars Boston and Providence the prices of smokeless coals range \$6.10@6.50 per gross on for inland delivery. Inquiry is very light.

Buying Is Fair in New York

Industrial consumers of bituminous coal in New York are taking in fair-sized tonnages of mine-run grades, both by rail and over the tidewater piers. Considerable tonnages are used in office buildings and other structures as a substitute for the smaller hard coals. Screened coals are in fair demand but are not up to expectations.

Quotations for low-volatile lump from central Pennsylvania range \$3.50@4.50; Broad Top coals, \$5.75@6.25. New River and Pocahontas prepared grades are priced



around \$4.50@\$5 at the mines. There is a fair demand for these coals in this market.

The Philadelphia market remains somewhat quiet, although there is some expectation of better business because of colder weather and failure to clear up the anthracite situation. Regular users of bituminous coal continue to take fuel in good volume, but even the threat of winter storms has brought no disposition to add to commitments.

Producers of screened coals, particularly low volatile, report better inquiries and shipments. Concerns producing high-volatile grades are getting more orders, but are far from having anything like the business they had hoped for.

Everything remains quiet at tidewater in the way of export orders, and few inquiries have been received of late. Bunkering is easily cared for. Prices remain fairly stable.

Little change is to be noted in the bituminous situation at Baltimore. Industrial call has been moderate, the amount of fuel on hand is liberal, to say the least, and competition in selling is so keen that at times it approaches the point of trading without profits. Even in prepared sizes, used as substitutes for anthracite, there is not the activity expected; these are quoted at \$2.15@\$2.25 f.o.b. mine. One of the things that troubles coal men now is the falling off in the export and bunker trade.

Steam coal is very active in Birmingham and there is no surplus of any grade. Coking coals and washed product suitable for the bunker trade are exceedingly scarce and the demand strong. Current consumption in the industrial field and among the utilities and railroads is heavier than at any other time during the past year, several of the rail lines having been in the open market trying to buy fuel to supplement their contract deliveries, on which they are taking the maximum tonnage. A certain amount of this coal is being stocked for the holidays, but the movement is much heavier than at this season for several years past. Bunker fuel is being bought in larger quantities than usual and some trouble is experienced in keeping the required tonnage moving to the ports. Some mines in the district had to decline some of this business altogether during the past week. Quotations on washed Cahaba and Black Creek now range \$2.75@\$3, mines. There has been no change in the range of other steam quotations during the past week.

Inquiry for domestic sizes is not as strong or insistent as it had been, but there is ample business in hand at the mines to take care of production for several weeks yet, and a fairly good number of orders are being taken on to supplement such bookings. The weather has been unseasonably warm for several weeks, which has militated against the active buying of household fuel. Quotations on domestic coals are unchanged.

An output of 435,000 net tons was reported for the week of Dec. 5, which is the highest for a similar period since 1918. Car supply has been sufficient to keep the mines going without delay for the past several weeks, but should production be increased very much a shortage no doubt would materialize.

Demand for Hard-Coal Substitutes Spurts

Improvement in demand for the various anthracite substitutes in New York last week resulted from lower temperature. Buying by retailers and consumers was on a larger scale. Coke appeared to take the lead, although there was a heavy demand on retailers having some anthracite. Anthracite domestic coals are quoted as high as \$23.50 by dealers able to make deliveries.

Consumers are not as optimistic of the ending of the strike as they were last week and are more willing to lay in more fuel.

There is some No. 1 buckwheat still afloat in the New York harbor. Good grades are quoted at \$8.75 to \$9.25, while mixed buckwheat, containing, it is claimed, about 50 per cent undersized coal, is quoted at \$8 to \$8.25, alongside. One day last week it was said there was one cargo of pea coal available in the harbor, which was held at about \$17 alongside.

Coke has taken an upward turn. Quotations are up about 50c. Egg size is quoted at \$5.50@\$6; nut and stove sizes at \$6@\$6.50. Coke in boats in the harbor is quoted at about \$10 alongside.

At Philadelphia an increased demand for fuel of all kinds has sprung up since Governor Pinchot's first peace efforts went up in smoke. Shippers of byproduct coke are again sold up weeks in advance, with beehive coke following closely on its heels. Prices have advanced, most of the sized beehive selling at \$6@\$7 at the ovens while byproduct brings about \$10@\$11 delivered.

Most all anthracite coal is now out of the retail yards, although a few dealers have small quantities of pea and buckwheat. The one company that had been shipping some pea and buckwheat here for the last several weeks now announces that its storage yards are empty.

At Baltimore the hard-coal situation is confined to some isolated instances of selling out of the usual run, as the larger dealers no longer have anthracite to offer of any size. A number of small fly-by-night traders have arisen, and are disposing of peck and bushel lots of soft coal, or hard coal where they could get a little at any reasonable price. These small dealers in many cases were not content with the profits they made from stiff prices for pecks and bushels, but used short-weight measures.

Buffalo's anthracite supply is coming to an end, having lasted much longer than expected. Coke is active and is getting scarce. Byproduct coke makers are withdrawing price quotations or putting them up. There is a good demand for buckwheat anthracite, but the schedule companies are all about out of it; there is still a fair supply of it in the hands of independent dealers, however.

Connellsville Coke Market Stiffens

The Connellsville coke market, after softening on first-quarter contract coke for blast furnaces, letting most of the uncovered furnaces in, has stiffened sharply in the last few days in prepared coke, resulting in higher prices for run-of-oven furnace coke.

In blast-furnace contracting, when offers at \$4.50 and then at \$4.25 did not interest furnaces, some operators became perturbed, and, anxious to book backlogs, closed a number of contracts at \$3.75@\$4—about an even dollar above the average of the contracts about to expire, made last summer. It appeared then that operators who had not sold any backlogs would also name these prices, but with the stiffening in the spot market this may not prove to be the case.

The turn in spot and prompt coke was due to various dealers, both in Pittsburgh and in the East, discovering that other dealers also were short, rushing to cover. Yard crushed coke had sold in a few cases at down to \$4.25, but it is up to \$6 now. It turns out also that operators sold pretty heavily recently at low prices and some are if anything oversold. Further advances are a decided possibility.

While the rush to buy is chiefly in broken, yard crushed, egg, regular crushed, etc., there is a strong influence on run-of-oven coke, which may now be quoted at \$4, against \$3.50@\$3.75 a week ago. Some furnaces already have paid up to \$4, it is said. Some have been buying extra lots, as is often done just before the holidays, to tide over a possible dip in contract shipments.

Spot foundry coke remains quotable at \$4.75@\$5.25, but is likely to advance. Contracts over the half year are quotable at the same range.

Car Loadings, Surplusages and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended Dec. 5, 1925.....	1,020,873	191,821
Previous week.....	923,213	172,279
Week ended Dec. 6, 1924.....	969,485	193,763

	Surplus Cars		
	All Cars	Coal Cars	
Dec. 7, 1925.....	159,897	54,277
Nov. 30, 1925.....	136,796	43,658
Dec. 7, 1924.....	208,451	95,961

Foreign Market And Export News

British Market Reflects Steady All-Round Gain; Output Still Climbing

A steady business continues in the British market for steam coals. Collieries are engaged busily on inland orders, which have perceptibly improved. Export inquiries flow at a fair pace, though much French business is reported in abeyance pending improvement in the position of the franc. The improving tendency in Italian demand remains in evidence, and a fair average business passes with the depots in South America, Spain and Portugal. Intimation has been received locally of possible heavy demands on Wales. A little more interest has been, and is, manifest in contract business, though buyers and sellers are at variance over prices and selling is mainly up to next April. Small coals are a strong section, this being due to larger bunker business, which includes increased proportions of smalls. Best Admiralty large is moving well for early loading. Monmouthshires are meeting with a better demand after prolonged inactivity,

though supplies are momentarily adequate, apart from smalls. Patent fuel also is enjoying better business at easier prices.

Bad weather in Newcastle has delayed tonnage supplies again, and the prompt business in the coal market is very erratic in consequence, buyers with guaranteed tonnage being well placed for obtaining discounts. The forward outlook, however, is fairly straight, and the sellers of both coal and coke are making no concessions on recent quotations. Just how far the coal subvention is assisting matters it is difficult to determine, but it is thought that the present selling prices will enable producers to keep on selling coals, but the prices themselves are not possible without the subsidy. Therefore, the anxious time is between now and the end of the subsidy period. The coke market continues to improve. There is a fairly healthy export demand for this class of fuel.

Production by British coal mines during the week ended Dec. 5, according to a special cable to *Coal Age*, totaled 5,210,000 gross tons, compared with an output of 5,185,000 tons in the preceding week.

Trade in French Market Takes Favorable Turn

The situation in the French coal market is generally favorable. Available supplies have increased somewhat during the last few days and this has made it possible to meet a slightly larger demand from the industry.

The depreciation of the French franc affects especially industrial grades, as there cannot be any question of curtailing imports of domestic coals. Wintry weather has increased the demand for house fuels, but Paris dealers note that consumers are ordering only small quantities at a time.

Imports of British coals are again decreasing, but still the news that the prices of Welsh anthracites have ceased rising was greeted with pleasure.

Notwithstanding their strong representations, Paris coal merchants have had to agree to pay for Belgian coal on the basis of the Belgian franc.

Indemnity fuel deliveries from the Ruhr during the first twenty-one days of November included 330,700 tons of coal, 149,300 tons of coke and 20,400

tons of lignite briquets. During the entire month of November, the O. R. C. A. received from the Ruhr 208,210 tons of coke, a daily average of 6,940 tons.

The prices of reparation fuels delivered via Rotterdam, Antwerp or Ghent, which were raised on Nov. 16, were again advanced from 3 to 7 fr. on Dec. 1 owing to the depreciation of the franc.

Business Dull, Prices Weak At Hampton Roads

Business at Hampton Roads last week was very dull, with prices weakening perceptibly, in the face of slackening demand. Prices at the mines were reported as having dropped materially, Pocahontas nut and egg having dropped from \$8 per net ton mines to \$4.50.

New England business was slower than normal for the season and foreign business was scarcely holding its own. The bunker trade was showing only fair activity.

Weak Tone in Belgian Market

The tendency in the Belgian coal market remains weak except for house coals. On the whole demand is still meager and, notwithstanding the restriction of output, pithead stocks are not decreasing. Competition of French coals is very active, as is also that of Dutch and British coals.

The situation is particularly bad in the Borinage district. In the other fields indications point to a slight improvement.

Operators declared that the present circumstances make it impossible to maintain the 5 per cent increase in wages agreed to for November. Conditions in the trade remain unfavorable and the measures taken by the government for remedying them have so far been of no avail.

Export Clearances, Week Ended Dec. 19, 1925

FROM HAMPTON ROADS	
For Cuba:	Tons
Br. Str. Mabay, for Havana.....	2,743
Nor. Str. Gro, for Havana.....	6,561
For Argentina:	
Dutch Str. Ameland, for Puerto	
La Plata	4,520
Br. Str. Seethope, for Rosario.....	3,761
For Brazil:	
Br. Str. Queen Olga, for Rio de	
Janeiro	5,880
For Bermuda:	
Swed. Str. Mongolia, for St. Georges..	2,833
For Italy:	
Ital. Str. Fiume, for Porto Ferrajo..	3,767
Ital. Str. Valcerusa, for Bagnoli....	7,170
For Canal Zone:	
Amer. Str. Achilles, for Cristobal...	12,036

FROM PHILADELPHIA

For Cuba:	
Br. Str. Wellpark, for Antilla.....	—

Hampton Roads Coal Dumpings* (In Gross Tons)

	Dec. 10	Dec. 17
N. & W. Piers, Lamberts Pt.:	137,574	140,533
Tons dumped for week.....		
Virginian Piers, Sewalls Pt.:	56,321	113,545
Tons dumped for week.....		
C. & O. Piers, Newport News:	107,496	154,098
Tons dumped for week.....		

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons PIERS

	Dec. 12	Dec. 19†
Pool 1, New York....	\$5.75@ \$6.00	\$5.75@ \$6.00
Pool 9, New York....	5.10@ 5.30	5.10@ 5.30
Pool 10, New York....	4.80@ 5.15	4.80@ 5.15
Pool 11, New York....	4.55@ 4.75	4.55@ 4.75
Pool 9, Philadelphia..	5.05@ 5.30	5.05@ 5.30
Pool 10, Philadelphia..	4.80@ 5.10	4.80@ 5.10
Pool 11, Philadelphia..	4.50@ 4.75	4.50@ 4.75
Pool 1, Hamp. Roads.	5.00@ 5.25	4.85@ 4.95
Pool 2, Hamp. Roads.	4.75@ 4.90	4.75@ 4.80
Pools 5-6-7, Hamp. Rds.	4.50	4.50@ 4.55

BUNKERS

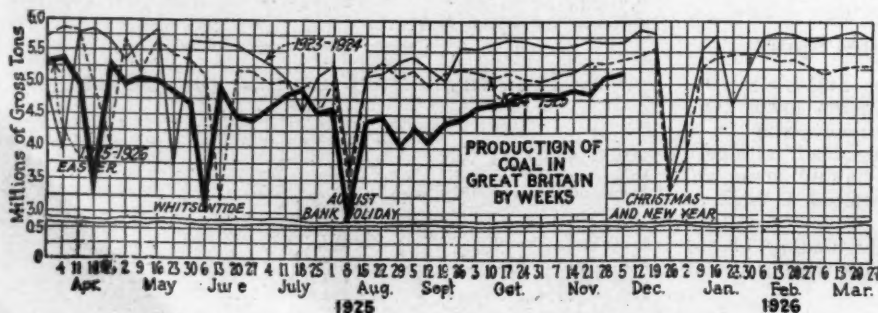
Pool 1, New York....	\$6.00@ \$6.25	\$6.00@ \$6.25
Pool 9, New York....	5.35@ 5.55	5.35@ 5.55
Pool 10, New York....	5.05@ 5.40	5.05@ 5.40
Pool 11, New York....	4.80@ 5.00	4.80@ 5.00
Pool 9, Philadelphia..	5.30@ 5.55	5.30@ 5.55
Pool 10, Philadelphia..	5.10@ 5.35	5.10@ 5.35
Pool 11, Philadelphia..	4.75@ 5.00	4.75@ 5.00
Pool 1, Hamp. Roads.	5.00@ 5.25	4.95
Pool 2, Hamp. Roads.	4.75@ 4.90	4.80
Pools 5-6-7, Hamp. Rds.	4.60	4.55

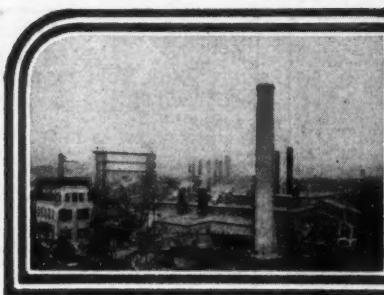
Current Quotations British Coal f.o.b. Port, Gross Tons

Quotations by Cable to Coal Age

	Dec. 12	Dec. 19†
Cardiff:		
Admiralty, large.....	21s. @ 22s. 6d.	23s. @ 23s. 6d.
Steam smalls.....	13s. 6d.	13s. 6d.
Newcastle:		
Best steams.....	17s. 6d. @ 18s.	15s. 3d.
Best gas.....	16s. 3d.	16s. 6d.
Best bunkers.....	15s.	16s. 6d.

†Advances over previous week shown in heavy type; declines in italics.





News Items From Field and Trade



ALABAMA

George Gordon Crawford, president of the Tennessee Coal, Iron & Railroad Co., has announced that \$10,000,000 will be spent for additions and new construction at the Fairfield division of the corporation. A battery of seventy-seven 16-ton byproduct ovens will be added to the present plant composed of 434 ovens and a belt conveyor will be installed to carry coke from the ovens to the furnaces.

COLORADO

A new coal company has been organized under the name of Barbour Coal Co., which will start to develop a coal mine in Huerfano County on the Rio Grande R.R., between the Alamo mine and Kebler No. 2 mine. The principal owners of the new company now control the Alamo Coal Co. and the Oakdale Coal Co. About a million dollars, it is said, will be spent in developing the mine.

The citizens of Frederick have sued the Evans Fuel Co. et al for \$22,000 damages, alleging that improper coal mining methods are causing the plaster to fall and walls to crack in their homes, while holes are forming in the main street.

ILLINOIS

Sale of 12,500 shares of the 15,000 shares of the stock of the defunct Southern Gem Coal Corp. was approved by Judge English in the U. S. District Court in East St. Louis, Dec. 11. The sale was to have taken place Dec. 8, but objections of a technical nature were filed by certain of the original stockholders. According to the terms of the sale the receivers of the defunct company received \$100,000 in cash for the property, and the purchaser, the Brewerton Coal Co. of Lincoln, assumes mortgages and obligations totaling \$1,633,000. It is expected that a portion of the mines will be opened this winter.

The Illinois State Miners' Examining Board has announced its January schedule as follows: Belleville, 11th; Harrisburg, 12th; Herrin, 13th; Marion, 14th; Benton, 15th; Duquoin, 16th; Litchfield, 18th; Springfield, 19th; Pana, 20th; Danville, 21st; Farmington, 22d.

Dr. Edmund H. Stinnes, owner and operator of large coal properties in Germany, was a visitor to the southern Illinois coal field last week. Dr. Stinnes

spent some time in several of the larger mining centers in southern Illinois, with West Frankfort as his headquarters. He was shown the bottom and top works of several mines, including No. 9 of the Old Ben Coal Corporation. In his tour of the United States Dr. Stinnes' general purpose is to study economic conditions in industrial centers. While in the local mining fields he declared that conditions were much more favorable in this country for coal mining than in his own country.

According to information available now, the prospects of the proposed merger of mines in the Standard and Mt. Olive fields seems to be at an end. Recent conferences, according to reports, show that the financial features of the proposition are almost too big for the people that are now handling it.

IOWA

The Dallas coal mine, one of the largest in Polk County, located northwest of Granger, has been purchased by the newly organized Dallas Products Co., of which Russell E. Carlson, H. M. Havner and Hugh Shuler are the principal stockholders. The company is capitalized at \$250,000. Arrangements have been made to operate the mine at once. The output of the Dallas mine runs between 400 and 500 tons daily. The Dallas Coal Co., former owner, has been in receivership since April 10.

KANSAS

An attempt to blow up and burn the fan house and tippie of the Moore Coal Co. mine in the southeastern Kansas field, early in the morning of Dec. 11, was frustrated when a man living near the mine discovered smoke issuing from the tippie and summoned aid to extinguish the fire. A keg of power was exploded under the belt wheel of the air fan in the fanhouse setting fire to the building but no serious damage resulted. A pile of oily waste had been ignited in the tippie. The total damage was estimated at not more than \$50. No clues were found. The mine employs forty union miners.

Coal operators of Kansas are on the warpath against so-called "compensation leaches," who they say enter fraudulent claims for compensation. Insurance adjusters are insisting, they say, that action be taken to reduce the number of alleged unjust compensation claims, under a veiled threat of withdrawal. Formation of a central body,

or "compensation clearing house," has been suggested, and it is understood a strong lobby is to be formed by Kansas coal operators at the January, 1927, session of the state legislature to urge changes in the state compensation laws.

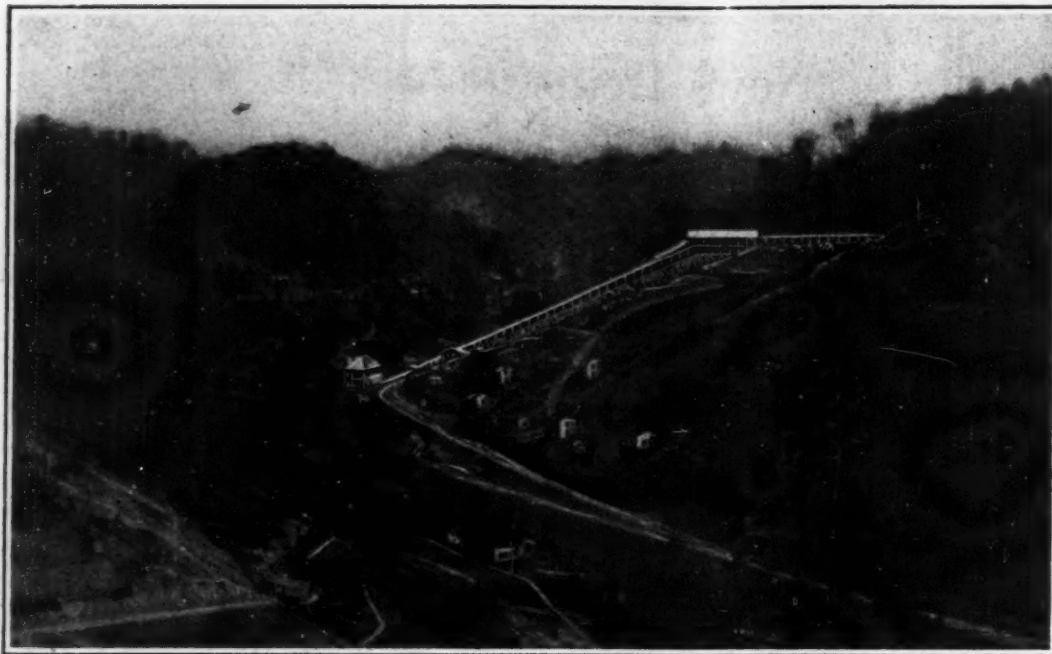
Jesse S. Rogers was appointed Dec. 1 to the position of state mine-rescue superintendent at the Arma state station, to succeed William ("Whitey") Hislop, who was transferred permanently to the central station at Pittsburg, succeeding William Morrison, who resigned Oct. 1. John L. Young, deputy state mine inspector, appointed Oct. 1, resigned effective Dec. 1 to take a position as inspector for the Associated Insurance Companies.

James Sherwood, state mine inspector, has ordered the discharge of two employees of the Wilbert-Schreeb Coal Co. who were caught tamping shots with coal drillings, which is against the law. An explosion in this mine caused a property loss of \$1,000 and nearly cost the life of a shotfirer.

Prosperity of Kansas miners during the past few months is reflected in their vote to dispense with a 4-per cent special assessment levied early last summer for the benefit of striking and unemployed coal miners. The special levy was lifted Dec. 1. A proposal to vote a 2-per cent assessment for aid purposes was voted down by a big majority.

A referendum vote on whether district headquarters of the Kansas miners will be retained at Pittsburg or removed to Frontenac or Arma, in the same county, will be taken by the miners on Dec. 29, and returns will be in the hands of the secretary not later than Jan. 10. Headquarters offices are now maintained in rented quarters in a Pittsburg office building. Miners and business men of Arma have agreed to donate \$10,000 toward erection of a building there to cost \$28,000. Frontenac miners have agreed to give their local union building, known as Miners' Hall, to the district. A majority vote for either project will be necessary to carry.

Miners of Kansas will vote Dec. 22 in a run-off election to select one of two candidates for district auditor. Votes will be counted Dec. 29 and the newly elected auditor will take his position Jan. 1. At the primary election there was a field of thirteen candidates. Jack Toschi of Ringo polled high with 1,137 and Arthur Eagleton was second with 690. They will be on the ticket in the run-off election.



Up First Creek Valley

Looking up the valley of First Creek from Blue Diamond, Ky., one can see located on the hill at the right the mine of the Sapphire Coal Co. now under the management of the Blue Diamond organization.

KENTUCKY

Flames which swept the Kentucky Coal Co. mine two miles west of Sturgis, Dec. 11, destroyed 30 wooden railroad cars of the gondola type, burned track and other inside equipment and finally forced sealing of the mine. Exact extent of the damage will not be known until the shaft can be unsealed. Several fire fighters were overcome while battling the flames more than 100 ft. below the surface, but no one was seriously hurt. A short-circuit in the automatic charging panel is believed to have started the blaze. The mine was the scene of a disaster last June, when 17 men were killed in a gas explosion.

The Cornett-Lewis Coal Co., of Louellen, Harlan County, has contracted with the Morrow Mfg. Co., of Wellston, Ohio, to construct a modern steel tippie with a capacity of 3,000 tons per day. The coal, which at this point is 85 ft. below the level of the railroad, will be dumped at the bottom and conveyed up a slope to the tippie by means of a rubber belt conveyor.

George O. Boomer, treasurer of the Pittsburgh Fuel Co., Louisville, is one of eighteen men named, from which nine directors will be elected by the Louisville Board of Trade in the annual election, to serve with nine holdover members.

The Consolidation Coal Co., at Jenkins, recently obtained J. H. Childress, deputy sheriff of Pike County, to be in charge of the private policing of the company at the Burdine plant.

A. T. Siler, wealthy coal operator and president of the Bank of Williamsburg, married Miss Minnie Murphy, of Williamsburg, a member of the State Republican Executive Committee, at Louisville, Dec. 12. A number of friends from Williamsburg, including D. B. Cornett and Joe B. Mahan, were present. Mr. Siler was State Railroad

Commissioner from 1904 to 1912 and very active in state politics.

George T. Cross, City Buyer of Louisville has been reappointed to that office for a period of four years under the new mayor, A. A. Will. Mr. Cross was a manufacturer before becoming city buyer.

MINNESOTA

The North Western Fuel Co.'s dock No. 1, at Superior, and the Inland Coal & Dock Co.'s dock at Duluth were credited with receiving the last cargoes of coal for the season, steamers loading at their plants on Dec. 16. With the completion of the addition now under construction at the inland dock it will have a length of 3,000 ft.

Coal receipts at the head of the lakes for the season just closed totaled 9,455,864 tons, as against 8,716,158 tons in the 1924 season. Stocks on hand Nov. 30 were 5,648,134 tons, of which only 171,120 tons was hard coal.

The former Superior dock at Duluth now operated by the Henry Ford interests received 499,999 tons of coal during the 1925 season of navigation, according to the report of James Patten, its superintendent. The coal was delivered by the two Ford steamers, Henry Ford II and Benson Ford, and it was supplied from the Ford Kentucky mines. Supplies of that coal are being carried on the dock and it will be distributed at Minneapolis and nearby territory during the winter. The East End Coal & Ice Co. is handling Ford coal on the Duluth market.

MISSOURI

Plans are being made for coal development near Nevada, Mo. Two brothers are behind the proposal, one of them from Chicago, where he is a member of the faculty of Chicago University. About 1,000 acres of land has been

leased between Greene Springs and Dederick and sufficient prospecting has been done to prove that it is underlaid with 31 in. of good coal with a good roof. The M. K. & T. Ry. has already agreed to put in a spur to the mine.

NEW YORK

The Acme Gas Coal Co., of Buffalo, with mines at Greenburgh, Pa., of which J. J. Eagan, of Buffalo is vice-president, has changed its name to the Acme Coal Mines Co.

Of the 23 reducing furnaces in the six plants of the Buffalo district 13 are running. The Bethlehem Steel Co., which lately blew in a new one, is operating five of these.

OHIO

The Hisylvania Coal Co., of Columbus, which for years has been operating Mine No. 23, at Glouster, stopped operations Dec. 11 and abandoned the property, as it has been worked out. The mine was one of the best known in the Hocking field and produced a large tonnage. The equipment, consisting of machines tippie and tracks, is being moved to the West Virginia property of the company, acquired a year ago at Swiss, in Nicholas County, on the K. & M. R.R.

The offices of the Lorain Coal & Dock Co. were moved, effective Dec. 14, from the Huntington Bank to the First National Bank Building, Columbus.

The Columbus Board of Purchase will receive bids Jan. 23 for 15,000 tons of nut, pea and slack for the municipal lighting plant; 8,500 tons for the Scioto River pumping station, and 3,000 tons for the garbage disposal plant. These purchases are designed to supply these departments until April 1, 1926.

A. & R. Brenholts, wholesaler, 165½ North High St., Columbus, has taken

over the output of the May Coal Co., at Alphretta, Ky. The output, which is about 500 tons daily, being sold from the Columbus office.

On the evening of Dec. 16 the Cincinnati Coal Exchange held a dinner dance and Christmas party at the Hotel Alms with Judge Joe Tuohy, president of the Coal Service Co., in the role of Santa Claus. Later he broadcast over WKRC the simple story of coal for the benefit of the radio bugs. Julius Ratterman, Elmer Wierkake, John Glaser, Bob Dickson and Fred Legg were in charge of the affair. About 160 persons were present.

Fred Gore, general manager in charge of sales of the Blue Diamond Coal Sales Co., of Cincinnati, is a patient in Dr. Mayo's hospital at Rochester, Minn. Lung trouble which forced him to take a rest for months was found to be caused by the lodgment of a small bone that a simple operation would remove. Another patient there is Burke Keeny, president of the Middle West Coal Co. and the Cincinnati Coal Exchange.

V. G. Miller, in charge of the Columbus branch office of the Dickinson Fuel Co., of Charleston, W. Va., reports that the seven mines of the company situated in the Cabin Creek and the Pond Creek fields are in operation. Much of the product is moving through the Columbus office.

Workers are cleaning up the mine of the Black Diamond Coal Co., located near Glouster, preparatory to resuming operations after an idleness of months. It is announced that about 200 men will be given employment.

Disregarding a custom which has been in vogue for many years, the Belmont County district of the United Mine Workers will not hold its annual convention at Bellaire in January. It is announced that there is no reason for the meeting as the Jacksonville scale does not expire until April 1, 1927.

According to James B. Dugan, secretary to the Ohio Utilities Commission, the coal production in Ohio for

1925 will fall considerably short of the output in the previous year. The total for the state up to Nov. 1 is roughly estimated at 19,180,850 tons, as compared with 21,178,650 tons during the corresponding period in 1924. The southern Ohio field has yielded 4,220,000 tons as against 4,734,000 tons for the same period in 1924.

OKLAHOMA

Through efforts of district officials of the miners in Kansas, Missouri, Oklahoma and Arkansas, comprising the Southwest district, International President John L. Lewis of the miners' union has authorized appointment of a commission representing the international organization to investigate charges of the miners that operators in non-combatant states are "aiding and assisting" Oklahoma operators in the conduct of a battle against the miners to reduce that state to the 1917 wage scale.

The Major Brothers, of McAlester, have leased a coal mine seven miles southwest of Haileyville and expect to begin operations at once.

Officials of district No. 21, United Mine Workers, deny that Dewar miners' local has disregarded union mandates by returning to work in the Cameo Coal Co.'s No. 6 mine. The records of the Kansas, Oklahoma & Gulf R.R., however, show that the mine has shipped 14 cars of coal since Dec. 7, when 35 union men were reported to have gone back to work under the 1917 scale rather than accept 70c. a week strike benefits while walking delegates received \$14 a day. The mine had been closed several months.

PENNSYLVANIA

The Pittsburgh Coal Co. on Dec. 12 distributed a payroll of \$60,043.37 to miners employed in the operations in the Pittsburgh district. Midland mine led with \$17,594.27; Banning No. 1 had \$15,680.55; Banning No. 2, \$15,571.38; Montour No. 10, at Library, \$11,197.17. These are all on the 1917

scale and the number of men who participated were 231 at Midland, 145 at Montour, 247 at Banning No. 2 and 229 at Banning No. 1. The miners in the five operations of the company dug more coal during the week ended Dec. 12 than at any time since operations have been resumed. The total tonnage was 20,942. Banning No. 2 led with 7,192 tons, Midland produced 4,780 tons, Montour No. 10, 3,698 tons, Banning No. 1, 4,632 tons, and Mansfield, 640 tons.

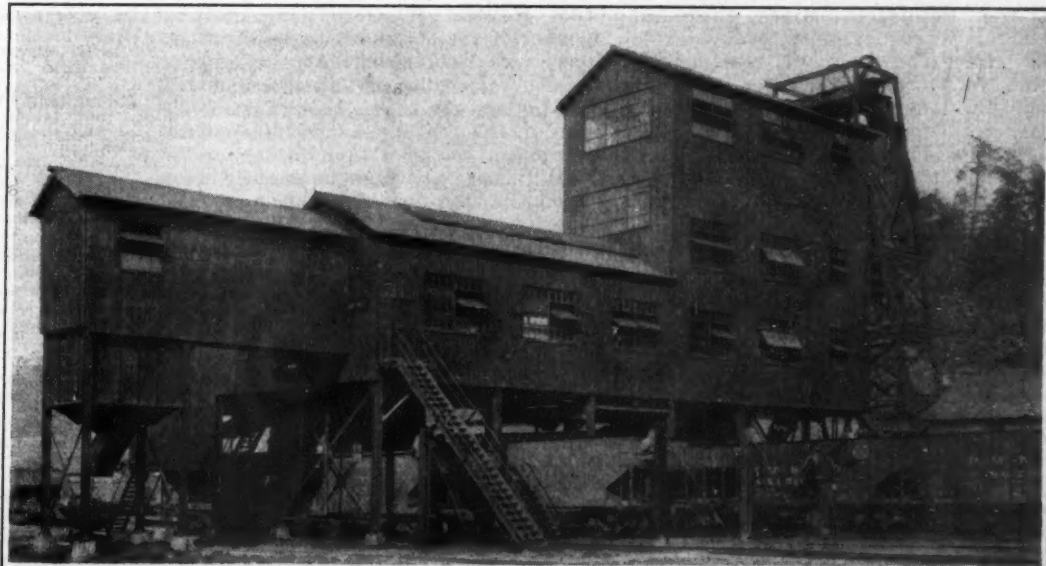
The Davidson mine of the H. C. Frick Coke Co., which has been idle for more than a year, will resume about the first of the year. The Hostetter-Connellsville Coke Co., a subsidiary of the Frick company, also has started up more than 200 ovens at the Whitney plant. The coal from the Davidson mine will be shipped to byproduct plants and the string of ovens will remain cold. In one quarter it was declared that it was unlikely that these ovens would be operated again.

The Bethlehem Mines Corp., subsidiary of the Bethlehem Steel Corp., and which is the only coal company in the Pittsburgh district, working on the 1917 scale with the exception of the Pittsburgh Coal Co., plans to put a second mine in operation before the end of the year. This mine is the Acme property, near Bentleyville, not far from the other unit working, known as the Marianna mine. On Dec. 15 a mysterious fire destroyed an untenanted company house at the Acme mine, causing \$2,500 damage. Union sympathizers are blamed.

Nearly 4,000,000 tons of coal was mined in the city of Scranton in the eight-month period from Jan. 1 to Sept. 1, according to the report of the City Mine Cave Engineers, Frank B. Davenport and Frank Gaffney, which was issued last week. The Glen Alden Coal Co. led in production with 933.58 foot acres, or a total—at 1,500 tons per foot acre—of 1,400,250 tons; the Scranton Coal Co. was second with 535 foot acres; the South Penn Collieries, third, with 337 foot acres, and the Pennsylvania Coal Co. next, with 296 foot acres. With the 2,464 foot acres mined

Modern Tipple at Wolf Run, Ohio

This up-to-date preparation and loading plant of the Warner Collieries Co.'s Wolf Run mine is located at Wolf Run, Jefferson County, Ohio. Modern equipment which includes shaker screens, picking tables and shaker loading booms, prepares lump, egg and nut and also loads mine run and slack for shipment over the Alliance Division of the New York Central R.R. which serves the Wolf Run Mine.



this year, the coal land assessable in 1926 is 46,566.16 foot acres, which has a valuation on the \$320 figure of \$14,901,120. If the new \$800 valuation should be upheld by the court the coal land subject to taxation would be assessed at \$37,252,800.

The Snowdon Coke Co., of Brownsville, has placed an order with the Fairmont Mining Machinery Co. for a large steel tippie, a structural steel trestle as an approach to a steel bin to store slack coal, and shaker screens, loading booms and other equipment. The work will be completed during the latter part of March.

Congressman Charles Esterly, of Reading, has prepared a bill for presentation in the House asking for a federal appropriation to dredge the Schuylkill River, thereby making it possible to reclaim thousands of tons of anthracite from the bed of the stream. It is understood that already in the Reading section arrangements have been made to turn this culm from the river into briquets.

UTAH

The Denver & Rio Grande Western R.R. has set aside \$100,000 to be used for continuing work on the Salina Canyon road to the coal mines above the town of Salina. It is expecting the road will be in operation next year.

VIRGINIA

The City of Norfolk is contemplating replacing much of its coal-burning equipment with oil burners because of difficulties with the grade of coal it has been buying. The City Manager has announced that he finds it extremely difficult to get the proper quality in coal, and already several pieces of coal-burning equipment have been slated for replacement with oil burners. Some of its steam apparatus will be removed and electrical equipment installed, the city to buy its power from private concerns.

WEST VIRGINIA

Work of rock-dusting Mine No. 42 of the Bethlehem Mines Corp. at Dakota, Marion County, was started Dec. 15. The work of rock-dusting mine No. 41, at Barrackville, where an explosion occurred last spring, recently was completed. Three coats of rock-dust were applied to all parts of this mine, according to N. A. Emslie, the division superintendent.

Chester C. Shinn, who has been in the employ of the Consolidation Coal Co. for more than 25 years, was named manager of the Fairmont sales office, which was opened in the Watson Building in Fairmont Dec. 16. Mr. Shinn will have charge of coal shipments in northern West Virginia, eastern Ohio and western Maryland. The Fairmont office also will handle the local coal trade for Fairmont and vicinity from the New England mine of the company, at Watson.

A spark from a welding machine being used by miners at the tippie of

the No. 114 mine of the Kanawha & Hocking Coal Coke Co., at Longacre, caused a \$40,000 loss by fire on Dec. 14. There had been a breakdown in the dump and the men were welding an angle iron. The flames destroyed the head house, pit mouth and the conveyor system. In order to save the tippie it was necessary to dynamite the conveyor system about one-third of the distance from the head house. The fire did not interfere with production, as the coal was shipped out from the other side of the hill, from the opening known as the No. 111 Carbondale.

A hard surface road between Clarksburg and Bridgeport, in the coal fields of northern West Virginia, was opened to the public Dec. 20.

Seals at Federal mine No. 3 of the New England Fuel & Transportation Co., where a mine fire occurred Feb. 3, 1924, were removed Dec. 15. Approximately 13 acres of Pittsburgh coal land were sealed. It is reported that the company will start producing coal soon in that portion of the mine.

Mines in the 12½ counties of northern West Virginia paid the miners for the last half of November in the week ended Dec. 12, when it is estimated that from \$1,150,000 to \$1,170,000 was paid out. Reports state that 1,301,800 net tons of coal were mined during that period.

Four buildings of the Crab Orchard Improvement Co., operating six mines at Eccles, near Beckley, were destroyed by fire on the morning of Dec. 12, at an estimated loss of \$100,000. Operation of the mines was not stopped by the fire, although destruction of buildings and machinery has interfered with repairs. The machine shop, electric shop and blacksmith shop with their contents and the hoisting apparatus at the No. 3 opening and the building housing it were destroyed. The belief is expressed that the wiring in the machine shop was responsible.

In selecting a state commission to make an exhaustive study of the tax system of West Virginia and to report its findings and recommendations to the next session of the Legislature, Governor Howard M. Gore named as a member of the body Col. James Elwood Jones, of Switchback, vice-president and general manager of the Pocahontas Fuel Co. and one of the best known coal men in the state. Another member, Republican National Committeeman V. L. Highland, although nominally engaged in the banking business, is extensively interested in coal-mining properties. E. H. Arnold, of Elkins, another member of the new body, is an attorney at Elkins, but also has been engaged as an operator as head of the Randolph Colliery Co.

The Marion Division of the Bethlehem Mines Corp. in December will load the largest monthly tonnage since it began to work on a non-union basis, according to N. A. Emslie, division superintendent, who says that about 80,000 tons will be mined. Output, he predicted, would reach 100,000 tons in January. The Preston division, which

embraces mines along the M. & K. R.R., broke all records last month, and it is predicted that a higher mark will be set this month.

The Davis Colliery Co., of Elkins, of which John T. Davis is president and T. B. Gross is secretary, is building a new tippie at its mine at Gilmer, in the Gilmer county field, and is equipping the mine with a shaker screen outfit and loading boom and also is enlarging its boiler capacity. The company expects to have the new tippie in commission soon after the first of the year. Four sizes of coal will be prepared—lump, egg, nut and slack, in addition to mine-run. In order to load several sizes simultaneously, track changes are being made under the tippie.

CANADA

Six Drumheller (Alta.) miners recently convicted of unlawful assembly during the strike of last summer and five others found guilty of besetting the A. B. C. mine, who were given varying terms of imprisonment have been granted new trials by the Alberta Appeal Court.

Coal loadings on Canadian railways for the week ending Dec. 5, according to the Dominion Bureau of Statistics, showed a decrease of 2,488 cars, loading in the Western division being lighter by 1,375 cars and in the Eastern division by 1,063 cars.

Traffic

A new regulation of the Erie R.R. provides that the company will absorb the Pennsylvania R.R. switching charge of 38c. per gross ton on anthracite when delivery is made to consignees having private sidings on the Pennsylvania R.R. at Elmira, N. Y.; effective Jan. 7, 1926.

Obituary

H. C. Clevenger, coal traffic manager at Pittsburgh, for the Pennsylvania R.R., died of heart disease, Dec. 17, in his office at Pittsburgh. He was born in Philadelphia, Oct. 17, 1873, and spent much of his railroad career of thirty-four years in that city. In 1911 he became coal freight agent of the Pennsylvania R.R., with headquarters at Philadelphia. On the return of the railroads to corporate management in March, 1920, Mr. Clevenger became coal freight agent at Pittsburgh. He was promoted to coal traffic manager a few weeks ago.

Gust. Johnson, president of the Western Fuel Co., Osage City, Kan., and the oldest original director of the Osage County Bank, died there Dec. 4. He is survived by his wife, two sons and three daughters.

Hiram P. Crouse, 63, for over five years Cincinnati correspondent for *Saward's Journal*, and well known to the trade and operators in the south eastern Kentucky and southern West Virginia fields, died Dec. 15 after an illness of five weeks. He was former publisher of the *Findlay Republican* and the *Toledo Times*, was chairman of the Ohio Republican central committee in 1896 during the McKinley campaign, assistant telegraph editor of the *Commercial Tribune*, Cincinnati, and later held a responsible position with the Union Central Life Insurance Co.

Coming Meetings

Chicago Wholesale Coal Shippers' Association. Annual meeting, Great Northern Hotel, Chicago, Ill., Jan. 6, 1926. Secretary, G. H. Merryweather, Temple Bldg., Chicago, Ill.

American Wood Preservers' Association. Annual meeting, Jan. 26-28, 1926, at Cleveland, Ohio. Secretary, E. J. Stocking, Chicago, Ill.

Coal Club of Philadelphia. Annual meeting, Jan. 28, 1926, at the Bellevue-Stratford Hotel, Philadelphia, Pa. Secretary, C. K. Scull, Philadelphia, Pa.

Northeast Kentucky Coal Association. Annual meeting, Jan. 28, 1926, at Ventura Hotel, Ashland, Ky. Secretary, C. J. Neekamp, Ashland, Ky.

American Institute of Electrical Engineers. Annual convention, Feb. 8-12, 1926, at Engineering Societies Bldg., New York City. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

American Institute of Mining and Metallurgical Engineers. Annual meeting, Feb. 15-17, 1926, at Engineering Societies Building, New York City. Secretary, Dr. H. Foster Bain, 29 West 39th St., New York.

The Rocky Mountain Mining Institute. Winter meeting, Feb. 23-25, 1926, at Albany Hotel, Denver, Colo. Secretary, Benedict Shubart, Boston Building, Denver, Colo.

New Companies

The C. W. Wells Coal Co., Whitesville, Ky., capital \$25,000, has been chartered by C. W. Wells, W. Minter and John M. Wells.

Sunbeam Coal Co., Ltd., of Calgary, Alta., Can., has been incorporated to develop and operate coal and other mines with a capital of \$100,000 by John L. Milligan, Gladys L. Milligan, Wm. J. Cameron and others.

The Madeleine Smokeless Coal Co., capital \$100,000, has been organized to operate in the southern portion of Raleigh County. Incorporators of the new company are Ashton Fife, W. W. Goldsmith, L. L. Scherer, C. B. Helmintoler and Helen L. Coleburn, all of Beckley.

Welsh Coal & Transportation, Ltd., of Montreal, Que., has been incorporated to produce, manufacture and deal in coal, fuel and byproducts, with a capital of \$50,000. The incorporators are Joseph A. Marion, Rosario Richer, Roger Pillard and others.

Publications Received

The name of the "Mining Catalog, Coal Edition" has been changed to "Keystone Catalog, Coal Edition," with its 1925 edition, which was issued recently.

Silicosis Among Miners, by R. R. Sayers, Bureau of Mines, Washington, D. C. Technical paper 372. Pp. 24, 6 x 9 in.; illustrated. Price, 15c.

Kansas Coal. Part I, Occurrence and Production, by C. M. Young, and Part II, **The Chemistry of Kansas Coal,** by H. C. Allen. Engineering Bulletin No. 13 and Chemical Research Division Bulletin No. 4. University Engineering Experiment Station, Lawrence, Kan. Pp. 202; 6 x 9 in.; illustrated.

The Mineral Resources of Manitoba, by R. C. Wallace. Industrial Development Board of Manitoba, Winnipeg, Man., Can. Pp. 48; 6 x 9 in.; illustrated.

The Smith Seam of the Lancashire Coal Field. Physical and Chemical Survey of the National Coal Resources No. 5 of the Fuel Research Board, Department of Scientific and Industrial Research, Westminster, London, England. Pp. 32; 6 x 9½ in.; illustrated. Price, 1s. 6d. net.

Power-Plant Lubrication, by W. F. Osborne. McGraw-Hill Book Co., 370 Seventh Ave., New York City. Pp. 275; 5½ x 8 in.; illustrated. Price, \$3. A practical book for the power-plant engineer, explaining the physical and chemical properties of lubricants, their action under changing influences of heat, pressure, etc., and the methods of determining their relative value.

New Equipment

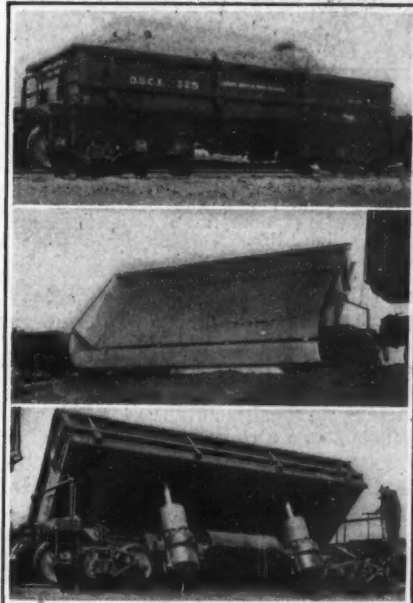
Air Operated Dump Car Throws Load Away From Track

Of special interest to those engaged in stripping operations, the reclamation of culm banks or other similar operations requiring the handling of large volumes of material over comparatively short distances is the new air-dump car manufactured by the Differential Steel Car Co., of Findlay, Ohio. This is constructed in two standard sizes, namely, 24 and 30 cu.yd. It is of all-steel construction and the center of gravity is low, giving great stability in transit. The total height of this car is only 7 ft. 4 in. above the rail. Side boards are 2 ft. 6 in. high making the height from rail to car floor 4 ft. 10 in.

In this car the box rides on four points of support above the bolsters. When dumping, therefore, the car box does not tilt about a central point but about one or the other line of trunnions upon either side. The side boards are hinged at the bottom and fold down to the plane of the floor during the dumping operation. The action of the dumping cylinders is cushioned at its completion so that no stress is imposed upon either car, track or supporting trestle and the material discharged is thrown well in the clear. No locking mechanism to hold the car box in an upright position is necessary.

Advantages claimed for this car by the makers include the following: Its low height affords stability and easy loading. The design is simple, affording ruggedness of construction. Inasmuch as the body rests on four supports directly over the bolster side bearings, great stability is attained and all locking devices rendered unnecessary. Any size of material that can be handled by a steam shovel can be dumped to either side merely by the proper throw of a lever. A whole trip can be discharged simultaneously to either side or any portion of it to one side and the balance to the other side from any car of the trip. The load is dumped clear of the track; the sector plate on the end of the side board prevents spillage and fouling of the track ballast. The flat, smooth bottom of the car allows clean discharge of even quite sticky material such as clay. The movement of the body during discharge imparts a definite throw to the material without shock. Shoveling of the material discharged is eliminated and in most cases the use of a spreader is unnecessary.

Numerous transverse sills support the bottom of this car. As a result the box is admirably adapted to the handling of large pieces of material and the rough treatment to which dump cars are invariably subjected. Cars of this type have been used for some time on the Mesabi iron range where they have given excellent satisfaction. They will be particularly useful in the coal



No Shovel or Spreading Necessary

In the upper view the loaded car may be seen ready to discharge its load. In the second the load has been dumped, sliding clear of the ballast so that no shoveling or spreading is necessary. The lower illustration is a rear view of the car in its dumping position. Note the numerous cross sills supporting and strengthening the floor plate.

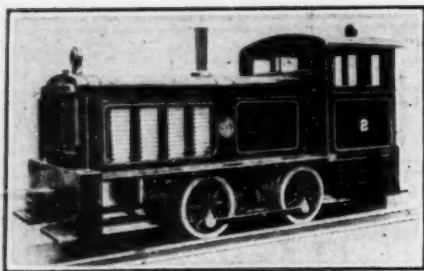
industry in strip pits where the spoil must be hauled to bank. They will prove useful also in those pits where the spoil is overcast, and the coal is loaded by shovel but passed through a preparator before being shipped to market.

New Gasoline Locomotive Has Spring Draft Rigging

In the accompanying illustration may be seen the new 12-ton gasoline locomotive recently placed on the market by the Vulcan Iron Works, of Wilkes-Barre, Pa. This machine is known as the Class EW-12 and is similar in general design and construction to the other worm drive machines developed by the same builder during recent years. All of these locomotives embody cast-steel frames, steel tired wheels, worm drive on the rear axle with side rod connection to the front drivers and a constant mesh transmission gear.

The 12-ton model here illustrated is equipped with a 100-hp. Waukesha motor fitted with Ricardo head. It has four speeds forward and an equal number in reverse. The actual speed along the track ranges from 2½ m.p.h. in low gear up to 12 m.p.h. in high. The drawbar pull in high gear is 2,275 lb. with a starting pull in low gear of 7,200 lb.

This locomotive may be built in any ordinary track gage up to standard and can be adapted to any haulage service. On account of its great power and



Sturdily-Built Car Switching Unit

This machine which weighs 12 tons is fitted with a 100-hp. motor. When equipped with spring draft rigging and M.C.B. couplers it is especially adapted to switching railroad cars. The spring draft rig protects the motor and other parts from the shocks of bumping and pulling and assures a long life.

sturdiness, however, this machine is particularly suitable to standard-gage switching work. For this gage the standard model is fitted with a spring draft rig and M.C.B. couplers. This rig is so designed as to take up in the bumper all the shocks of coupling, together with the stresses of pulling and pushing railroad or other heavy cars. The motor and other working parts are protected by the spring draft rig and a long life is assured.

Electric Speedometer Can Be Installed Anywhere

Tachometers are well-known instruments about the mine. In a broad sense, they range all the way from the simple hoist indicator or the speedometer used on the company automobile or truck, to the device that indicates the r.p.m. of the big turbine in the power plant. Heretofore in practically every instance it has been necessary that the indicating dial or scale of the instrument be located comparatively close to the machine whose speed it measures. That is, within reach of a chain, a belt or a shaft. The Electric Tachometer Corp., of Philadelphia, Pa., recently has developed a device of this kind that is subject to no such limitations and may be placed anywhere within hundreds or even thousands of feet of the machine whose speed it indicates.

This tachometer consists of a magneto-generator driven positively from the shaft of the machine, the speed of which is to be measured. This generator has the property of producing a voltage exactly proportional to the speed of the driving shaft. It is, therefore, a simple matter to calibrate a voltmeter in either revolutions or feet per minute corresponding to the speed of the shaft or the travel of a hoisting cable. This voltmeter which has either a 7½- or 9-in. dial can be furnished with any scale desired. Thus far the maximum rope speed of hoist for which these tachometers have been calibrated, has been 1,500 ft. per minute. The usual practice is to furnish indicators with a central zero point, so that hoist speeds can be read in either direction.

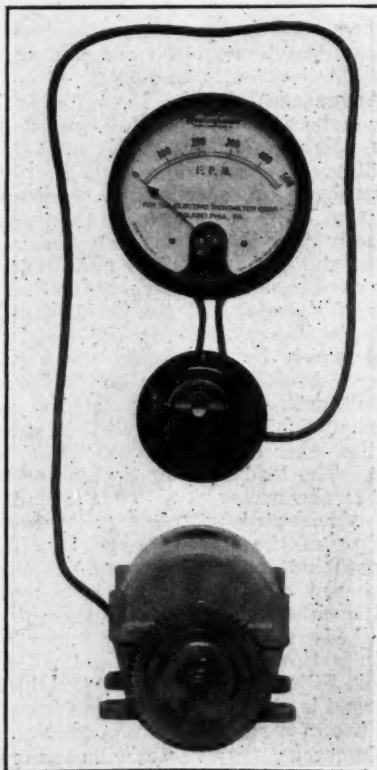
One of the chief advantages of tachometers of this kind is that the indicating instrument can be removed from the source of energy by almost

any distance whatsoever. Thus the indicator may be connected to the magneto by several hundred feet of cable. This makes it possible to place the indicating instrument where it is most desired and where its usefulness will be a maximum, as well as where it will be thoroughly protected from all outside interference.

With this indicator and magneto is provided a rheostat by means of which the reading of the instrument may be corrected in case it becomes inaccurate, or in case the drive ratios for the magneto are changed.

This tachometer lends itself to a variety of purposes, but in many cases such as where the instrument is attached to a motor shaft, turbine, stoker or other machine, it is advantageous that the scale shall read in revolutions per minute. On the other hand, belt speeds, conveyor travel and the like may well be indicated in feet per minute, while the speed of locomotives may be read directly in miles per hour. On the other hand, if attached to an electric generator the instrument may be calibrated to read in cycles per second.

Heretofore, where instruments of this general type, that is, those intended for indicating the speed of various machines, have been employed, it has been necessary to mount the instrument either on the machine itself or close at hand. With this new electric tachometer, it becomes perfectly possible to attach the magneto to the hoist drum shaft, place the rheostat upon the wall of the hoist house and the



Voltage Is Proportional to Speed

By connecting the magneto positively to the machine the speed of which is to be indicated and making its voltage proportional to its speed the voltmeter which acts as the real indicator may be placed at any point desired. Hundreds or even thousands of feet may thus separate these two instruments.

indicator in the superintendent's office several hundred or possibly thousands of feet away.

Industrial Notes

At a recent reorganization, the Joy Machine Co., was taken over by the Joy Manufacturing Co., of Franklin, Pa., which will continue the manufacture and sale of mechanical coal loaders. All rights to coal-loading and allied machines heretofore invented by Joseph F. Joy, of Pittsburgh, Pa., and to all subsisting patents covering such machines in the United States, Belgium, France, Great Britain, Austria, Australia, Canada and Germany, together with all pending applications in said countries and the patents to be issued thereon, have become the sole property of the Joy Manufacturing Co.

The Erie Electrical Equipment Co., Johnstown, Pa., announces the appointment of the Universal Electric Sales Corporation with offices at 30 Church Street, New York; 11 Beacon Street, Boston, and 332 Healy Building, Atlanta, Ga., as representative in the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, eastern Pennsylvania, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida, Tennessee and Alabama.

Charles M. Schloss has been admitted to partnership in Lindrooth, Shubart & Co., manufacturers' representatives in Denver, Colo.

The Babcock & Wilcox Co. announces that it has purchased the Fuller-Lehigh Co. and its subsidiaries, manufacturers of pulverized-fuel and cement-mill equipment as well as the Bailey Meter Co., manufacturers of meters and recorders, combustion-control equipment, pulverized-fuel feeders and water-cooled furnace walls. The Fuller-Lehigh Co. and the Bailey Meter Co. will be operated with the same organizations as heretofore with the exception that Col. J. W. Fuller will become chairman of the board of the Fuller-Lehigh Co., E. G. Bailey will become president, and A. E. Douglass, of Fuller-Lehigh Co., will become vice-president in charge of sales. Mr. Bailey will continue to act as president of the Bailey Meter Co. and R. S. Coffin will continue as vice-president and general manager. By the acquisition of these companies the Babcock & Wilcox Co. will be able to offer boilers, superheaters, economizers, air heaters, chain-grate stokers, oil burners, pulverized fuel equipment, water-cooled furnace walls, meters, and combustion control equipment; all in any combination that may be required to supply complete steam generating units.

The Oxweld Acetylene Co., 30 East 42nd St., New York City, announces the appointment of J. N. Walker as general sales manager. L. D. Burnett has been appointed Eastern department sales manager to succeed Mr. Walker, and Z. T. Davis, Jr., is now filling Mr. Burnett's former assignment as assistant sales manager, Eastern department.

Trade Literature

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., has issued a 41-page book on its **Engineering Achievements for the Year 1925**. The book is well illustrated and covers a diversity of subjects.

Type D-54 Mechanical Drive Turbine is the title of the four-page bulletin GEA-197, recently issued by the General Electric Co., Schenectady, N. Y. Describes the operation of this turbine, which is intended for the driving of centrifugal pumps, blowers and other classes of mechanical drive.

Recent Patent

Process of Treating Coal; 1,555,590. John F. Lahart, Minneapolis, Minn. Sept. 29, 1925. Filed Sept. 11, 1924; serial No.